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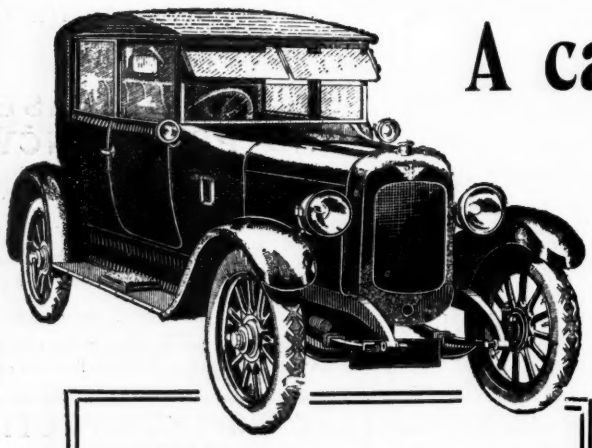

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ON

THE POSITION OF THE THYROID GLAND IN THE ENDOCRINE SYSTEM.*

BY

W. LANGDON BROWN, M.A., M.D.CANTAB., F.R.C.P.,

PHYSICIAN WITH CHARGE OF OUT-PATIENTS, ST. BARTHOLOMEW'S HOSPITAL; PHYSICIAN TO THE METROPOLITAN HOSPITAL.

FEW subjects in medicine have so powerfully stimulated interest and imagination of recent years as endocrinology. It provides the missing link between biology and psychology, and has profoundly modified our conception of disease. The internal secretions result from the specialization of the old chemical stimuli to which primitive animals reacted even before there was a nervous system at all. They reveal their antiquity in the way they cling to vestigial structures. Not infrequently when in the course of evolution a structure has become useless for its original purpose the endocrine system supplies it with a new tenant. Thus, the thyroid probably represents the Palaeostracan uterus, the parathyroids and thymus originate from the now useless gill-slits, the pituitary represents an invertebrate kidney, and the pineal an invertebrate eye. They remind us of the hermit crab that seizes on an empty whelk shell. And just as the hermit crab existed before it found an empty house, so the endocrine functions were in existence before they had a local habitation. This is particularly well seen in the primitive chromaffin material, which was originally widely diffused throughout the body of lower animals, before becoming concentrated in the adrenal medulla.

Internal secretions regulate instinctive behaviour. When the gonads of the queen bee reach a certain stage of development they render her strongly heliotropic. Hence the nuptial flight. The immediate effect of fertilization is to destroy this heliotropism, and she seeks the shelter of the nest. So with human beings. The instinctive behaviour of a young man in the presence of the opposite sex, whether shy or aggressive, depends mainly on the state of his endocrine system, and the unreasoning fractiousness of the climacteric woman merely reflects the chaos into which this system falls when its keystone is displaced. In this connexion it may be pointed out that the influence of these glands on secondary sexual characters is rather complex. The man with hyperthyroidism shows feminine traits, hyperpituitarism leads to virilism, hypopituitarism to feminism; and increase in the adrenal cortex, while producing premature sexual development in children, leads to marked virilism in women. According to Blair Bell, all the endocrine glands acting in harmony control metabolism in accordance with the needs of reproduction, and adapt the whole organism, physically and psychically, to this end. These few examples will illustrate what may happen when harmony is replaced by discord. The endocrines not only develop some characteristics, but they repress others. Without following Bolk to all his conclusions, I should agree that certain monkey-like traits are kept in abeyance by the pituitary. When this is diseased, as in acromegaly or osteitis deformans, the reversion to a monkey-like aspect is obvious. It is also known that when the pineal is diseased there is sexual precocity. Bolk suggests that the present function of the pineal is to delay sexual maturity in the interests of a more prolonged somatic development, for in the higher species the individual counts for more and fertility for less.

The activities of the endocrine glands are correlated to a large extent through the nervous system. We are so much more conscious of what goes on outside than of what occurs inside us that when we speak of the nervous system we are apt to think of it only in terms of the sensorimotor structures which keep us in touch with the external world. But for the maintenance of our vital functions we depend much more on the autonomic nervous system—and it is this system which has entered into an alliance with the endocrine glands.

THE AUTONOMIC NERVOUS SYSTEM.

The autonomic, vegetative or visceral nervous system consists of two great divisions, the sympathetic and the parasympathetic or extended vagus. The former is katabolic, converting potential energy into kinetic and facilitating outward manifestations of that energy, while the latter is anabolic, directing energy inwards where it is stored up. When these two are distributed to the same structure their action is always antagonistic, and when one is stimulated the other is inhibited. The rhythm of life depends largely on the fluctuating balance between these two. The parasympathetic plays the chief part in the digestion and assimilation of food, the sympathetic spends the energy thus derived. In sleep the parasympathetic gains control, and the arrest of external manifestations of energy lasts until the balance is restored in favour of the sympathetic, when the subject awakens ready to expend energy again.

Each of these great divisions co-operates with a group of endocrine glands—the sympathetic with the adrenals, thyroid, and pituitary, the parasympathetic mainly with the glands of the digestive organs and their annexes. Possibly the parasympathetic co-operates also with the parathyroids. The autonomic nervous system is pre-eminently defensive in its action. In the primitive animal either the parasympathetic may be brought into play when the shock to which it is exposed is very great, producing immobility—the "shamming dead" reflex—or the sympathetic may be stimulated, violently activating the body for flight or fight. It is important to note that either this or that result follows without any attempt at compromise between the two, which Sherrington has shown is typical of reflex action in general.

But the sympathetic nervous system is a defensive mechanism not only against the external, but also against the internal foe. Fever is a response to bacterial invasion, and we now know that it is produced peripherally rather than centrally, since the cerebral vessels are remarkably impermeable to drugs and toxins so long as they remain intact. And this is carried out by the thyroid and adrenals, possibly with the aid of the pituitary. Fevers are known to be followed by changes in the adrenals and thyroid, but Cramer has been able to show that anything which calls for increased production of heat definitely increases the secretory activity of these glands. Mere exposure of a mammal, though not of a cold-blooded animal, to a low temperature will effect this. The injection of the drug known as T.H.N. will produce similar changes, together with all the phenomena of heat-stroke, and only exposure of the injected animal to cold will prevent a fatal issue. He has found similar changes in hyperpyrexia, and to a less degree in all fevers. He regards the heat regulation of the body as mainly effected peripherally, and points out what a profound effect climate must therefore have on the endocrine glands. Indeed, when one compares the brain, rigidly shut off in its bony box, with the peripheral apparatus in the skin, possessed of sensitive end-organs, responsive blood vessels, and sweat glands, together with the power of acquiring protective pigment, the case for a peripheral regulation of the temperature becomes so plausible as to cause wonder at its being overlooked so long. This was, no doubt, because it was so difficult to see how sufficient co-ordination could be obtained, as long as the close ties between skin, sympathetic nervous system, and endocrine glands were not appreciated.

Leonard Williams some twelve years ago called attention to the influence of climate in moulding racial character through the endocrine glands, but his conception was too much in advance of current medical thought then to receive the attention it merited. He pointed out that not only are there differences between the white man and the black, between Asiatics and Europeans, between the Latins and the Saxons, admittedly and even obtrusively climatic in origin, but that modifications through climate can still be seen at work. He says: "In illustration of the last point I need only mention the fair skin and the red hair which long residence in northern climes has conferred upon some Jewish families, and the stereotyping by the climate of the North American continent of the descendants of its widely dissemblant annual European recruits into the hatchet-shaped face and wiry frame of the Red Indian aborigines." He suggests that the skin may be compared to a sensitive plate, stimulation of any portion of which will produce reflex activities in some distant organ, and he regards the formation of cutaneous pigment as protective against such stimulation becoming excessive. The distant organs mainly affected in this way he believes to be the endocrine glands, and it is obvious that the adrenals, for instance, play an important part in the pigmentary changes in the body. Recent observations show the pituitary must share directly in this, since tadpoles that had the anterior lobe of that gland removed became albinos. The unadapt-

* Delivered before the South-Western Branch of the British Medical Association at Plymouth on December 7th, 1921.

ability of albinos to climatic changes is well known. At the time the theory was put forward the close association between the sympathetic-endocrine system and the higher levels of the nervous system was not sufficiently recognized to make it acceptable. But I think we are now justified in saying that climatic environment can modify our psychic "make-up" through the endocrine glands.

HYPOTHYROIDISM.

These preliminary considerations will enable us to realize the position of the thyroid gland in the endocrine system. Says McCarrison: "The thyroid gland is to the human body what the draught is to the fire." It is a quickener of the whole metabolism. Recent studies of basal metabolism have shown that in hypothyroidism this is lowered by 40 per cent., while in hyperthyroidism it may be raised by an even greater amount. Although severe degrees of hypothyroidism, such as myxoedema and cretinism, are well recognized, there are minor degrees, as pointed out by Hertoghe, which are unfortunately often overlooked, although they are eminently amenable to treatment. In the adult these are characterized by the accumulation of material which should be katabolized. Headache, giddiness, somnolence, and a sense of fullness in the ears and nasopharynx, are not uncommon. A number of manifestations of hypothyroidism are attributed to rheumatism, although really due to myxoedematous infiltration of ligaments and fasciae, producing knock-knee, painful heel, flat-foot, and lordosis. The hand becomes lax and flabby, feeling, as Hertoghe says, like a glove stuffed with clay. A very helpful sign of hypothyroidism is the disappearance of the outer half of the eyebrows. The association of this with "rheumatic" symptoms should suggest the administration of thyroid extract. Nocturnal enuresis has been shown to be sometimes due to the same cause, partly because desquamation of the epithelium of the bladder renders it more irritable, and partly because of the deep somnolence. Infiltration of the nerve centres causes mental slowness, loss of memory, and difficulty in expressing ideas. Sometimes there are hallucinations of sight and hearing. It is rather surprising that acute mania should occur in myxoedema, but it does so occasionally. I recently saw an example in a middle-aged man whose myxoedema had improved extraordinarily under thyroid extract. Unfortunately he abandoned medical treatment and took up Christian Science. He became violently maniacal, and was removed to an asylum. Here they recognized that he was suffering from myxoedema, but at first they were afraid to give him thyroid extract because of his maniacal condition. But when they did so he again improved rapidly, and was soon able to give his medical history. He is now quite sane.

HYPERTHYROIDISM.

Turning to hyperthyroidism it is convenient, as McCarrison does, to classify the influences leading to it under the three heads of nutritional, toxic, and psychic.

(1) *Nutritional.*

Lack of vitamins leads to diminished thyroid secretion (McCarrison). Mellanby has suggested treating Graves's disease by cutting off the fat-soluble vitamin from the diet, but I have not been much impressed by the results of this method. Under the nutritional heading we may also include some part of the epochal changes in the gland, such as is so common in girls at puberty. In this connexion I should like to call attention to the importance of a small or twisted upper lateral incisor as evidence of gonadal deficiency. It is difficult to see the connexion until we recall that this condition of the incisor is the slightest degree of cleft palate. It is an atavistic stigma, and implies a difficulty in establishing adult development. This may explain why, as I have observed, such patients are liable to undue enlargement of the thyroid at puberty, since it is apparently more of a strain for them to achieve maturity.

(2) *Toxic.*

Two sources of toxaemia seem particularly apt to produce thyroid enlargement—namely, intestinal and oral. We can understand why intestinal toxaemia has this effect, since Kendall has shown that the active principle of thyroid secretion is an iodine compound of indol, a putrefactive decomposition product of the tryptophan in the protein molecule. It would appear as if the body provided in this way its own antidote, an increased production of indol necessitating and providing for more thyroid secretion. Quite as striking is the influence of oral, particularly tonsillar, sepsis. It is hardly too fanciful to connect this with the fact that the thyroid gland originally discharged its secretion into the mouth through the foramen caecum at the base of the tongue. Since thyroid secretion is evidently increased by reaction to bacterial infections, an infection so near to the point at which this secretion was originally discharged might be expected to be specially potent in this direction.

A few weeks ago I had a case in hospital of recent and severe thyroid enlargement in a lad of 17. The gland formed a tense collar from the jaw to the clavicles, and his neck measured 20 inches in circumference. I was afraid that he might have sarcoma of the thyroid, but Mr. Dunhill, who kindly saw him with me, thought it was probably subacute thyroiditis. His tonsils appeared septic, but before they could be enucleated he had an attack of tonsillitis, after which the gland rapidly subsided, so that in a few days the neck measured only 17 in. The tonsils were then enucleated by Mr. Harmer. X rays were applied to the gland and he was given thyroid extract. He improved with remarkable rapidity. It should be added that he showed no ocular signs, tachycardia, or tremors. His increased thyroid secretion had apparently been needed to combat the sepsis.

Squier has commented upon the rapid subsidence of thyroid enlargement after an acute infection, which he attributed to diminution of secretion through post-infective sclerosis of the gland. Of course, other septic causes may induce thyroid enlargement besides these two, and I recently saw a case of Graves's disease following pericarditis. Indeed, Walter Edmunds speaks of the toxin of acute rheumatism as one of the recognized causes of Graves's disease. But, after all, there is a good case for regarding acute rheumatism as due to alimentary streptococci of altered virulence.

(3) *Psychic.*

While making full allowance for the influence of the other two factors, I am convinced that in Graves's disease the psychic factor plays a very large part. Happy people do not get Graves's disease. "But who is happy?" you may retort. True it is that it would be hard to find anyone who during the past seven years had not been subjected to some kind of unpleasant emotional strain, whereas only a limited number developed this disease. But in cases both of fully developed Graves's disease and in the *formes frustes* the history of shock, strain or psychic conflict is generally pronounced, even though the medical man is not able to obtain it for some time. Matrimonial causes frequently lie at the root of the trouble, and these are not reasons which the patient cares to parade. The factor of shock was shown repeatedly during the air raids on London, as it was after the San Francisco earthquake and the Kischineff massacres. As Coué has expressed it, the emotions rather than the will affect structure. Now, the emotions find their expression through the sympathetic nervous system, and it is the sympathetic that innervates the thyroid gland. Cannon's classical experiment on cats definitely proved that stimulation of the cervical sympathetic would cause exophthalmic goitre. Once the vicious circle is started it is hard to break, for the sympathetic stimulates the thyroid and thyroid secretion lowers the threshold to sympathetic stimulation. To my mind, operation, radium or *x* rays, operate merely as factors in breaking this vicious circle by diminishing the amount of thyroid secretion and thus allowing the balance to be restored. But the earlier and more efficient the medical treatment the less frequently will surgical interference be required. And for medical treatment to be efficient all those factors must be carefully investigated, remembering that it is when more than one of them is at work that Graves's disease is most likely to result. Treatment will consist of rest, psychotherapy in the widest sense, elimination of toxic factors, and administration of quinine hydrobromide for its sedative effect upon the sympathetic. Indeed, this drug has been used in America as a test for hyperthyroidism. For while it is generally well tolerated in this condition, patients with an adenomatous or compensatory enlargement of the thyroid gland will display symptoms of cinchonism fairly soon. I usually give it in 5-grain doses three times a day to men and in 2½ to 3-grain doses to women.

THE INFLUENCE OF HYPERTHYROIDISM ON CARBOHYDRATE METABOLISM.

As is well known, glycosuria occasionally happens in hyperthyroidism, while lowering of carbohydrate tolerance is more common. What is not so clearly recognized is that the curve

of sugar in the blood after ingestion of carbohydrate is, as far as my observation goes, always abnormal. Usually the amount of sugar in the blood rises to a level at which glycosuria would normally occur, yet without the appearance of any sugar in the urine. There is also a delay in its return to the normal level. Since glycosuria does not occur, it would appear as if the kidney threshold for sugar had risen, presumably as a compensatory mechanism. This rise of blood sugar is the method by which the thyroid secretion provides for the increased heat production in fever. In other words, both in Graves's disease and in fever the thyroid contributes towards increased katabolism by mobilizing sugar into the blood stream, and the kidney holds it there by raising the threshold against its excretion. It is noteworthy that in several of my cases of this type transitory glycosuria has nevertheless occurred under emotional stress, or amenable glycosuria has come on as the hyperthyroidism became less acute. I would interpret this by saying that the threshold was lowered again before the carbohydrate plethora passed off. Conversely, in myxoedema the level of the blood sugar remains low, even after the ingestion of considerable amounts. In part, no doubt, these effects of the thyroid are due to its antagonism to the pancreas. This antagonism is expressed not only (1) in the high blood sugar which is common to increased action of the thyroid and diminished action of the pancreas; and (2) in the mydriasis following instillation of adrenaline into the eye, which occurs under similar conditions; but also (3) in the output of pancreatic diastase in the urine, which is diminished in hyperthyroidism.

Intermittent Swelling of the Thyroid in Certain Nerve Storms.

The close association between the thyroid gland and the emotional nervous system is seen in the following three cases:

Case I.

A lady of 50 was brought to see me because she suffered from periods of depression followed by periods of excitement, tachycardia, and tremors, in which the thyroid swelled. Hysterectomy had been performed four and a half years before, and a cystic adenoma had been removed from her thyroid ten years ago. She had no glycosuria after 100 grams of dextrose, and, unlike an ordinary case of hyperthyroidism, her urinary diastase was rather high. This was not observed, however, during a period of excitement. The effect of quinine hydrobromide was to cut out the periods of excitement, but to leave the periods of depression as severe as ever. Careful search was made in this case for a toxic factor, without success.

Case II.

A girl of 20 was admitted to hospital under my care with the history that some eight months previously her ovaries and tubes had been removed on account of tuberculous disease. After this she became distinctly fairer in complexion, and put on weight considerably. She suffered from hot flushes. Her thyroid had been rather full before the operation, but this had been less noticeable since, except during the attacks for which she was admitted to hospital. These occurred every three to four days. There was no aura, and consciousness was almost but not completely lost. She flushed and choked, while the pulse and respiration quickened very much. The attacks lasted about six minutes, and ended quickly, though the pulse rate subsided more slowly. The thyroid swelled noticeably in the attacks, and she passed a small amount of sugar then, but not at other times Under bromide and opocaps of ovomammoid the attacks ceased completely—the last having occurred on September 4th. Her weight has fallen considerably, the hot flushes have ceased, and her general condition has greatly improved.

Case III.

A man of 31, who had been subject to *petit mal* for three months following an accident thirteen years ago, had a recurrence of these attacks after another accident in 1917. In July, 1921, he had malaria, after which his *petit mal* assumed some new features; on recovering from a brief unconsciousness he became restless and excited, complained of difficulty in swallowing, and his thyroid swelled. On one occasion it was only the left lobe that enlarged. He is a man of great intelligence, and he expressed himself as feeling completely disorientated for about ten minutes by an attack. A curious feature was his bradycardia, the pulse rate varying from 48 to 52. Even when his temperature rose to 104° in an attack of malaria his pulse only went up to 64. Yet on vigorous exercise the pulse rate rose to 96 for a short time. I associate this bradycardia with his epilepsy.

It is interesting to note that the first two patients had their endocrine balance upset by the induction of an artificial climacteric, one in early life, the other shortly before the time when it would have normally occurred. I should like to call special attention to the benefit derived from the ovomammoid extract in apparently restoring endocrine balance in the second case. In the third case no doubt the thyroid specially suffered in the outbreak of excitement because it was already irritated by an infection—namely, malaria. I have since heard that on quinine hydrobromide till free from malarial parasites, and then on potassium bromide, he has kept entirely free from attacks. I also learned he had matrimonial troubles, which, as I have said, so often have an effect on the thyroid gland. The absence of tachycardia with emotional excitement suggests that vagotonia played a part in this case. But all three cases illustrate the influence of emotional excitement on the thyroid.

Such cases should, I think, be distinguished from the condition of thyroid instability described by Leopold-Levi and Rothschild where there are spurts of hyperthyroidism occurring with a background of continuing hypothyroidism. This may be compared to a state of "irritable weakness." In one such case I saw these spurts were accompanied by tachycardia and tremors, yet her weight was rapidly increasing, and until small doses of thyroid extract were given she appeared to be developing acute myxoedema. Pituitary extract was first tried without benefit, but on thyroid the condition cleared up rapidly.

It may well be asked what are the points which should guide us in determining whether thyroid enlargement is compensatory for a deficiency of thyroid secretion, or whether there is genuine hyperthyroidism. I would say that if basal metabolism is increased, if there is wasting, pyrexia, continued tachycardia and tremors, with attacks of diarrhoea, and if there is any glycosuria, the case is certainly one of hyperthyroidism, and thyroid extract should not be given, but quinine hydrobromide is indicated. If these signs are lacking and the patient is putting on weight, thyroid extract should be given a trial.

The Cardio-Vascular Complications of Thyroid Disease.

Hypothyroidism.

(*a*) *Vascular.*—The liability of the subjects of hypothyroidism to chilblains is well known. A condition like Raynaud's disease is not uncommon. It will usually be found that there is then a well-marked intestinal toxaemia, usually the result of definite visceroptosis, which often exhausts the thyroid while also affecting the vessels. Mr. Morley Roberts has suggested to me that histamine may be the product of putrefaction which damages the capillaries, and from some preliminary investigations I have made it seems to me this may be the case. Treatment should be directed to the condition of the bowel, such as by a Curtis support, Plombières douches and intestinal antiseptics.

(*b*) *Cardiac.*—I have seen a number of instances where patients with hypothyroidism and feeble flabby hearts have been labelled as suffering from "fatty heart." I agree with Leopold-Levi and Rothschild that thyroid extract benefits such cases greatly, but that great care is required in the dosage. Naturally some apprehension may be felt about giving such a drug in this condition, but half a grain twice a day has never, in my experience, produced any unpleasant symptoms.

Hyperthyroidism.

(*a*) *Vascular.*—Goodall and Rogers describe three stages in the reaction of the blood pressure to Graves's disease. First, a preliminary rise from the sympathetic irritation which has caused the thyroid enlargement, possibly from simultaneous stimulation of the adrenals. Next, a fall of pressure from the vaso-dilator effect of the excessive thyroid secretion, which they regard as the safest stage for operation. Thirdly, a rise due to reduction of this secretion, accompanied by some change such as cardiac hypertrophy.

(*b*) *Cardiac.*—Here again we are indebted to Goodall for a clear exposition of the position. Prolonged tachycardia may exhaust the myocardium. This leads to atony and dilatation with valvular incompetence. Then myocardial degeneration is apt to result, which may go on to auricular fibrillation. Quite lately I have seen three instances of this in the later stages of Graves's disease. Further, there is a danger of this fibrillation affecting the ventricles after operation, which is probably the cause of the sudden death which sometimes follows it, as unfortunately happened lately in a case under my care. There is a liability to a considerable rise of blood pressure after operation, which greatly adds to the work of an already overtaxed heart. Ventricular fibrillation is not compatible with life.

THE PARATHYROIDS.

These glands were first described as distinct entities by Sandström, while Gley was the first to attribute to them functions apart from the thyroid. But in 1907 Forsyth concluded that they were merely portions of the main thyroid gland which had not yet formed vesicles, and that all the intermediate stages between thyroid and parathyroid tissues occurred. Berry, as the result of 1,338 operations for the removal of goitre without the occurrence of tetany, altogether discredits any separate function for the parathyroids; but as he states he always leaves a piece of gland at the hilus, he presumably does not completely remove them. The consensus of opinion at the present time seems to be that the general effect of the parathyroids on metabolism is antagonistic to the thyroid, and that they play a special part in the fixation of calcium in the tissues. If the nervous system lacks calcium it becomes more irritable, and tetany is likely to occur. It is possible, however, as pointed out by Noël Paton, that it is the accumulation of methyl-guanidine which occurs after parathyroid removal that causes tetany, since injection of this substance will produce a similar effect. Parathyroid secretion may distoxicate methyl-guanidine. Korenchevsky has repeatedly produced tetany in rats by destroying their parathyroid tissue, which forms a distinct encapsulated structure in these animals, with the electric cautery. Clinical observations by Hurst, Cordier, and G. H. Clarke support the view that parathyroid disease causes tetany, tremors, and fibrillary twitchings, among other symptoms, which can be relieved by administration of parathyroid extract. That these glands have some effect in checking calcium loss has been shown by comparing the output of calcium salts on thyroid and parathyroid extract. Quite recently Vines has shown the value of parathyroid extract in promoting the healing of ulcers of the skin and stomach. He suggests that various chronic infections damage the parathyroids and thus prevent healing by diminishing the amount of ionizable calcium salts in the blood. Walter Edmunds has noted that after parathyroidectomy animals may be kept alive longer by an exclusive milk diet, with the addition of calcium lactate. He also quotes Eppinger, Falta, and Rudinger, who found that the removal of the parathyroids, one by one, tended more and more to favour the onset of glycosuria. This would suggest that the parathyroids work with the pancreas and fall into the anabolic group, while antagonizing the thyroid, which belongs to the katabolic group. It also raises the question as to whether the increased calcium loss in diabetes may be due to parathyroid deficiency.

CONCLUSION.

We are thus led to the conclusion that the position of the thyroid gland in the endocrine system is that of a powerful activator of metabolism. In this respect it co-operates with the adrenals and pituitary, and antagonizes the pancreas and parathyroids. On the nervous side it co-operates with the sympathetic nervous system, both being stimulated to increased activity by it and lowering the threshold to it. In this way it plays an important part both in external and internal defence. Externally it leads to greater manifestation of energy in the direction of fight or flight; internally it quickens the reactions to bacterial invasion. An important way in which it accomplishes this is by mobilizing the blood sugar. This increased supply of sugar may either be used for muscular energy in external defence or for heat in the febrile reaction of internal defence. As a provision against waste of this sugar the kidney threshold is raised to prevent its escape into the urine, so that despite hyperglycaemia there may be no glycosuria. Yet this blood sugar may exceed even this raised threshold, so that some escapes. This is particularly likely to occur during emotional excitement, when the gland is apt to enlarge. It interacts also with the gonads, and the undoubted fact that it plays a more active part in female metabolism may be due to its origin from the uterus of a Palaeostracan ancestor. This interaction may account for the disturbances which are so apt to occur in the gland after an artificial or natural climacteric. That in the former instance this is likely to take the form of intermittent hyperthyroidism may be due to the gland being still in full activity; in the latter instance hypothyroidism is more common, presumably because the gland is already undergoing retrogression. The combination of a distressing emotion of matrimonial origin with a toxaemia of alimentary origin is the most fertile cause of hyperthyroidism, and the biological consideration here presented may help to explain why this is the case.

RHEUMATOID ARTHRITIS DUE TO INFECTION OF THE NASAL ACCESSORY SINUS.*

BY

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IN this ancient city of Bath which our medical colleagues have made renowned throughout the world, not as the Mecca of the rheumatic, for that it has been long before medical practice could be termed a science, but as a centre where exceptional clinical opportunity has been utilized for scientific research and post-graduate study, it is with a certain sense of diffidence that I chose for the subject of my address such a group of diseases as rheumatism, neuritis, and arthritis.

The recognition of the infective nature of a considerable percentage of clinical syndromes loosely designated rheumatism, rheumatoid arthritis, chronic articular fibrositis, neuritis, and so forth, has led to investigations directed to the many possible sources of such infection. While the teeth, gastro-intestinal and genito-urinary tracts have received due consideration, there lies in the nasal accessory sinuses a possible source of chronic systemic infection which merits more attention than has hitherto been accorded to this region. And if, as I hope to show, the nasal sinuses may contain the cause even in a percentage only of such intractable diseases, it is the more important that these nasal cases should be recognized inasmuch as it is relatively easy to determine the presence or absence of nasal sinus infection.

Why a nasal source of the infection in rheumatoid arthritis is so liable to escape attention, and how it is that the joint affection is more prone to arise in patients whose nasal symptoms are slight rather than in cases where there is profuse purulent rhinitis, I shall endeavour to explain below. Before doing so I submit brief notes of some cases which have benefited so definitely by treating the infection of the nasal sinus that it seems to leave no room for doubt that by such treatment the source of the joint disease was eliminated. Of three examples the first illustrates the earlier or slighter forms of articular fibrositis; the other two were typical cases of chronic rheumatoid arthritis (fibrositis) of long standing.

CASE I.

Miss E. R., aged 40, was referred by Dr. Mary Morris, of Bath, on account of chronic fibrositis, involving several finger-joints, gradually developing for two years, chronic rheumatic pains in the legs and feet, central frontal headaches, and an occasional subjective sense of foul odour. For four years she had noticed some post-nasal catarrh, and this led her medical attendant to suspect a nasal source, particularly as treatment for pyorrhoea had failed to relieve her. Furthermore, the patient, formerly of a bright and active disposition, was mentally repressed. Examination of the nose revealed no nasal discharge whatever, yet the history of post-nasal catarrh and the general condition of the patient was so suggestive of a latent infection of an accessory nasal sinus that exploration of the sinuses seemed warranted if only to eliminate such a source of infection as a cause of the serious disease that menaced her health. Exploration of the maxillary antra, sphenoidal sinuses, and the left posterior ethmoid cells was made by means of my suction syringe, so as to obtain a "deep-sea fishing" from each cavity. No pus was obtained, though the left antrum and the left posterior ethmoid cell yielded turbid contents. On bacteriological examination by Dr. Kay Mouatt, both the maxillary antra yielded cultures of *Staphylococcus pyogenes aureus*, and the left ethmoidal cell staphylococcus, together with a bacillus that "is frequent in influenza-like catarrhs"; the other sinuses were uninfected. A solution of 1 in 10,000 mercury biniodide was injected into each cavity, and the diseased antrum was opened and drained. The patient rapidly improved and was further benefited by autogenous vaccines from the cultures. Not only did the rheumatic swellings largely resolve, but the general health improved and she regained her former cheerful disposition and betook herself actively to games.

The second example is of interest, not only on account of the very long history of the joint affection, but also as being one of the very large percentage of cases of appendicitis occurring in association with chronic infective rhinitis.

CASE II.

Miss B. D., aged 46, had suffered from rheumatism in the left knee from the age of 14 and in the right from one year later. This condition persisted without much change till, sixteen years later, the left wrist and finger-joints became involved; not very long afterwards she had an attack of neuritis in the left shoulder. Ten years before I saw her she began to suffer from pains and stiffness

*Abstract of the Presidential Address to the Bath and Bristol Branch of the British Medical Association.

n both ankles and the right wrist as well as the left. She had undergone five courses of baths at Bath in different years and for three years had been treated at Vittel. In 1906 her appendix was removed.

She had had some nasal trouble on and off since 1884 when she first consulted the late Dr. Edward Woakes, and at varying intervals she had consulted three other rhinologists for nasal catarrh.

On examination of the nasal passages there was little to be seen beyond some strings of opalescent tenacious mucous discharge, unseen except by endorhinoscopy. Cultures of the contents of the sinuses obtained by exploratory lavage were made by Professor Walker Hall, who reported that the maxillary antral cavities were sterile, but that the sphenoidal sinuses yielded *Staphylococcus aureus* and *Streptococcus brevis*. Fuller details of the case, particularly with reference to the pathological investigation, are given in a report to the Royal Society of Medicine.[1] The sinuses were disinfected by injecting collosol argentum and great improvement followed, particularly when later the infected sphenoidal sinuses were opened and drained. She lost all her headaches and her stiff joints became more supple and free from pain, but the most striking feature was the very marked diminution of the chronic rheumatoid arthritis, swelling of the wrist, and the absence of pain—an improvement which had been maintained when I saw her a year later.

CASE III.

W. B., a man aged 54, had well-marked typical fibrositis in the left wrist and finger-joints of three years' duration; this had been followed by similar involvement of the right wrist and finger-joints, the knee-joints and one ankle. He had been through a course of baths and massage, first at Buxton and a year later at Bath; he was considerably relieved of the joint pains for the time being on each occasion. The patient had chronic catarrh, deafness, and slight rhinitis, and was mentally depressed. The successful result obtained in the previous case led me to explore this patient's nasal sinuses. The left maxillary antrum was found to contain much thick pus, the right was clear. The right sphenoidal sinus yielded a heavy growth of *Staphylococcus albus*. The sinuses were washed out and disinfected, and all the joints and swellings and pains were strikingly improved; after opening and draining the involved sinuses all the old pains had gone, and the stiffness and swellings of the joints abated.

In the course of a discussion following the contribution I made on this subject in the Laryngological Section of the Royal Society of Medicine several speakers cited examples occurring in their own practice. Mr. O'Malley, for instance, referred to a man, aged 50, with orbital cellulitis and a history of rheumatoid arthritis for twenty-five years; he opened the ethmoid region, evacuating foul-smelling pus, and eighteen months later the patient came again, saying, "The extraordinary thing is that I have no aches and pains in my joints now, whereas previously they had ached for years and years." At the same discussion Colonel Sharp cited an instance of fleeting rheumatic pains and well-developed melancholia in a woman. Many forms of treatment were tried in vain by her physician, and she was referred to Colonel Sharp to examine her tonsils, in the hope that something might be found to account for the rheumatism. But the tonsils and nose were healthy, except that the left sphenoidal sinus contained slightly milky fluid. The sinus was opened and drained, and within three days the melancholic regained her usual cheerful disposition, and in ten days she left, quite free of rheumatic pains—a good result which continued up to the time of the report several years afterwards. It is difficult to avoid the conclusion that in this patient the melancholia, as well as the muscular rheumatism, was directly due to toxic infection from the left sphenoidal sinus, and it is noteworthy that, so mild apparently was the sinus infection, that there were no localizing symptoms, the infective source being discovered here almost accidentally. A well-marked example of melancholia attonita due to nasal sinus infection was seen by me, in consultation with Dr. Wilson Smith, about two years ago.

CASE IV.

A lady, aged 57, had suffered from purulent nasal discharge for about seven months, associated with headache and increasing loss of memory and mental depression, culminating in a state of mental stupor. Dr. Wilson Smith suspected that the nasal disease caused the mental condition, and examination of the nose revealed polypoid degeneration in the right middle meatus, with pus coming from the right frontal sinus and the right maxillary antrum. These sinuses were opened and drained. The pus from the right antrum yielded staphylococci, with a few streptococci; the left antrum and sphenoidal sinuses were apparently sterile. Several decayed teeth were subsequently removed. There was no great mental improvement for nearly a month; then her mind began to clear, and two months after the operation she was almost herself again mentally.

Many instances of profound mental depression, and in not a few suicidal impulses, have occurred among my cases of nasal sinus infection, but I think the examples I have cited are sufficient to emphasize the profound, and sometimes disastrous, effect on the central nervous system of a toxic infection from the nose.

To explain the relation of the general systemic manifestations to a source of infection in the nasal sinuses, I may digress for one moment to take the simplest and probably most common of all sources of toxic systemic infection, that due to enlarged tonsils and adenoids, so commonplace that the lessons such cases afford are apt to escape attention. A typical patient suffering from diseased tonsils and adenoids is listless, apathetic, with so-called poor circulation, and recurring nasal catarrh. With the removal of the septic adenoid masses of the nasopharyngeal and faucial tonsils the whole picture is changed and the transformation from a listless, apathetic, anaemic child with poor circulation is only to be accounted for by the removal of the sources of a persistent septic infection. One of the most striking facts about these cases is that often enough it is in those children in whom the tonsils and adenoids are relatively small that the greatest benefit results, and that in others where the hypertrophy is great the general symptoms are comparatively slight. We cannot say that the larger the tonsils and adenoids the more pronounced are the evil effects resulting from their presence; we are driven to the conclusion that the aggregations of lymphoid follicles called tonsils are in fact protective up to a point, and that when the hypertrophy proceeds *pari passu* with their ingestion of the infecting organisms the balance is largely held and the septic absorption inhibited until the tonsils have become overwhelmed by the infecting organisms.

When we turn to a consideration of nasal catarrh as a source of systemic infection we are confronted with a similar paradox. It will often be found that a patient whose nose is full of polypus and constantly streaming pus from one or both nostrils, looks bright, ruddy, and robust, and even fat, whereas another patient, who has nothing but a slight non-purulent nasal discharge, is depressed, thin, and sallow, and obviously in very poor health. I think the explanation is that, given an infection when there is a profuse outpouring of polymorphonuclear cells with phagocytosis, the invading organisms are so largely inhibited or ingested that the patient is protected from toxic absorption, whereas in other cases, where a similar infection exists with but a few pus cells, toxic absorption is more pronounced. We see precisely analogous conditions in *post mortem* wound infection: if the point of infection forms an acute abscess it is usually a local inconvenience, but if the infection spreads up the lymphatics there is infinitely graver danger of acute general septicaemia. It is necessary to emphasize the fact that the slighter and apparently harmless nasal discharges may be clinically more virulent and more prone to cause systemic infection than the profusely purulent discharge, otherwise we may fall into the error of arguing that, because with definite purulent discharges from the nose systemic infection is unusual, it must follow that with the less marked nasal trouble the nasal origin of an infection must be even a more remote contingency. This very natural error leads us to overlook the possible import of a slight nasal or post-nasal catarrh, particularly as a patient suffering from a painful affection, or who is feeling decidedly ill, does not pay much attention to such a trivial complaint in his nose or throat. No class of case serves better to support this view than the result of toxic infection of the optic nerves from nasal sinusitis, because in the ocular manifestations we can to some extent measure the damage done by the poisoning and the benefit following the removal of the source of infection by opening and draining the involved and infected nasal sinuses.

If we take one of the simplest examples of a canalicular neuritis due to sphenoidal sinus suppuration we observe that the optic nerve sheath lies in close contact with the very thin upper part of the outer wall of the sphenoidal sinus, forming sometimes a bulging prominence in the sinus wall, sometimes running in a thin bony canal through the cavity of the sinus. But the usual result is that toxic absorption through the thin sinus wall involves first the inner aspect of the optic nerve sheath, and consequently the inner fibres of the optic nerve are the first to suffer, with resulting contraction of the temporal visual field. The contraction of the visual field may be considerable before the central visual acuity is affected, and if the involved sinus is opened and drained there is good prospect of recovery of vision and of the visual field expanding to normal.

REFERENCE.

[1] *Transactions*, Royal Society of Medicine, 1919, xii, p. 220.

A CASE OF DIAPHRAGMATIC HERNIA.

[*With Special Plate.*]

BY

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With Surgical Notes by JOHN MORLEY, CH.M., F.R.C.S., *and Radiological Notes by* J. M. WOODBURN MORISON, M.B., C.M., of the same Hospital.

A LARGE number of these cases are now on record, but they still rank as pathological curiosities. They may be divided into several groups, which are very distinct:

(*a*) Traumatic cases, of which the war has provided a regrettably large number.
(*b*) True diaphragmatic hernia arising from a congenital defect in the diaphragm, through which abdominal content herniates.
(*c*) Eventration, in which there appears to be a congenital weakness of the diaphragm and consequent dislocation of related abdominal viscera.

The following case illustrates the difficulties of accurate diagnosis and of selecting the best method of treatment.

A schoolgirl, aged 10 years, was brought to hospital, having had a cough and cold for two weeks. There were eight other children in the family, all healthy and well. The mother had had one miscarriage, and one child had died at the age of 12 months from zymotic enteritis.

The patient had never been robust, but the only serious illness occurred when, at 2½ years of age, she developed morbilli followed by pneumonia. The child had been to hospital on three or more previous occasions for trivial ailments, but in spite of this had lost very little time from school. The only present complaint was of cough and cold. At no time had there been any reason to suppose that the gastro-intestinal tract was other than normal.

Routine examination resulted as follows:

The child is small and thin, with normal colour and no deformities. The chest is poorly covered, the ribs being easily visible and respiratory movement normal. The area of cardiac dullness, position of apex beat, and heart sounds were normal, and no extension of dullness to the right was found. The pulse was good.

The right lung appeared healthy, but on the left side an area of dullness to percussion was found, extending downwards from the fifth rib in the nipple line, eighth space in the anterior axillary line, and angle of the scapula behind. Over this area vocal resonance and fremitus were almost absent, while breath sounds were diminished but normal in character, with no adventitious sounds. In the abdomen the liver dullness extended from the sixth rib to the costal margin, where its edge could be felt; the spleen could also be felt, its dullness being merged in that above described.

No other abnormality was found beyond the fact that the pupils, though fully active, were not quite equal, the left being slightly larger than the right.

While under observation it was found that the upper limit of percussion dullness over the left lung was variable, being sometimes a rib or space lower than that above described. Hippocratic succussion and the coin sound could sometimes be obtained. At no time during observation were there any symptoms pointing to the digestive tract.

Dr. Morison, radiologist to the hospital, made repeated examinations of the chest at all stages of digestion, and the following is a condensed report of his findings:

The screen examination of the chest showed a complete regular dome on the left side, extending as high as the level of the third rib in front, and enclosing an air space through which in the upper part lung tissue was seen. At the bottom of this air space there was a sharply defined horizontal line of fluid on which waves and ripples were produced by palpation of the abdomen.

No definite movements of the bow line in the chest were observed during respiration, although on one occasion I thought there was a slight reversed movement (an upward movement during inspiration and a downward during expiration), but I was not quite confident of this.

The dome of the right diaphragm was at the level of the tenth dorsal vertebra. Its movements were normal. The heart was slightly displaced to the right. There was an increased density of the root shadows of both lungs.

On giving a bismuth meal the food was held up at the cardiac opening of the oesophagus, the lower third of which was dilated, the obstruction was soon overcome, and the stomach was seen to fill in an irregular manner. The cause of this was apparent when the patient, who up to this stage had been examined in the postero-anterior position, was placed in the right anterior oblique position. There were two sacs, the shadows overlapping in the postero-anterior position. The upper sac, when filled, spilled in a forward direction into the lower. The pyloric end of the stomach was directed backwards, and was not well formed. There was no delay in emptying.

In the lying-down position the bismuth meal passed up to the top of the bow line in the chest, displacing the air, and completely filling the dome, which was not altered in position. Nothing abnormal was detected in the small intestine. The colon was well outlined, and the splenic flexure was found to rise alongside the air cap of the stomach to the top of the bow line in the chest, but not beyond it. At other times the whole of the dome in the chest was filled by the air cap of the stomach.

A barium enema confirmed these observations on the colon, which was otherwise normal.

It soon became apparent that in this case the determining factor was the *x*-ray finding, and that it was the only possible means of differentiating the genuine hernia from an eventration.

The difficulty in the case largely lay in the fact that the patient had come under observation in the absence of symptoms, whereas so many of the other recorded cases had been acutely ill or had shown active gastric symptoms.

It was finally determined that the case was most probably one of true congenital diaphragmatic hernia, and that these cases usually did not come under observation until some acute condition, as volvulus or strangulation, had occurred. The prognosis was then extremely bad, and it was decided that for these reasons it were wiser to operate under quiet conditions and so prevent the onset of these more serious symptoms.

Mr. John Morley, surgeon to the hospital, was therefore asked to see the case, and operation was undertaken. It had been previously determined that the function of the stomach as regards acid and pepsin was normal, or at least that part of it from which the test meal was recovered.

Operation took place on February 19th, 1920; gas and oxygen with ether were administered by Dr. K. B. Pinson.

It was decided to perform thoracotomy in the first place, as it was considered that this would facilitate reduction of the herniated viscera through the diaphragm by affording more direct access. Accordingly, with the patient in the right lateral position, an incision five inches long was made along the eighth left rib, with its centre in the posterior axillary line. The rib was resected to the extent of four inches and the pleura opened. The ribs above and below were retracted widely by Tuffier's rib spreader.

The fundus of the stomach could now be seen projecting up into the thorax far above the level of the incision. It was at once apparent that a transparent layer of thinned-out diaphragm formed a covering for the elevated abdominal viscera and separated them completely from the true pleural cavity, which was greatly reduced in size. To the highest point of this thin translucent diaphragm the base of the left lung was firmly adherent. These adhesions were fibrous and vascular and were readily divided. The diaphragmatic sac was now incised. On opening it the splenic flexure of the colon and left extremity of the great omentum and greater curvature of the stomach were presented. These were quite free from adhesions. The upper pole of the spleen also came into view.

It was now plain that there was no functioning diaphragmatic muscle at all, but that the whole diaphragm was merely represented by a thin sheet consisting of pleura above and peritoneum below, with some rather dense fibrous tissue between. A partial excision of this diaphragmatic sac was determined upon, with the object of bringing down its level as near to the normal as possible, and so reducing the distortion of the stomach and allowing more expansion of the lung.

The opening in the sac, therefore, was enlarged backwards with scissors towards the posterior aspect of the heart, and an elliptical strip of thinned-out diaphragm removed. The abdominal viscera were now packed downwards, so as to remove upward pressure on the sac, and the rent in the sac was sutured with two layers of catgut in such a manner as to overlap the edges broadly and so reduce the diaphragmatic level. When this was completed the dome of the diaphragm reached to the seventh rib in the mid-axillary line. After wiping blood clots from the pleura the rib spreader was removed and the pleura and intercostal muscles sutured with continuous catgut. The superficial muscles and the skin were then sutured in layers.

The patient took the anaesthetic well, but the pulse became very rapid during the suturing of the diaphragm and reached a maximum of 180.

Convalescence was uneventful and rapid. There was considerable pain on respiration for the first few days, but it was noticeable that no pain was felt at the usual site of referred pain from the phrenic nerve—the tip of the left shoulder.

Microscopical sections of the piece of diaphragm removed showed normal endothelium on the pleural and peritoneal surfaces, and between these dense fibrous tissue, with no sign of muscle fibres. No nerve fibres could be made out in sections that were specially stained to show them.

The subject of non-traumatic hernia of the diaphragm was discussed by Scudder[1] in 1912, who stated that up to that date 1,000 cases had been reported, most of which were discovered *post mortem;* 53 operations had been performed, of which 11 were thoracotomies, with 7 recoveries and 4 deaths, and 42 were explored by an abdominal incision,

FIG. 1.—Perirenal inflation, right kidney; plate on back, tube below. Suprarenal body well shown.

FIG. 2.—The same, but with the patient lying on his back; tube above; and some amount of compression.

FIG. 3.—View of both kidney regions, same subject, one hour after perirenal inflation.

GEORGE J. LANGLEY: DIAPHRAGMATIC HERNIA.

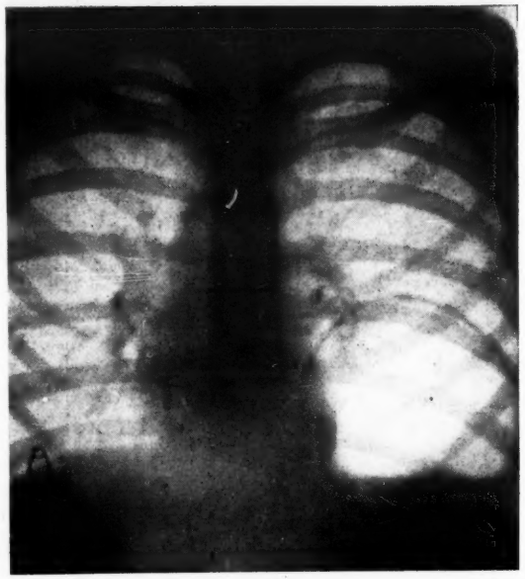

FIG. 1.—Chest. Note: (*a*) Regular dome through the upper part of which lung tissue is seen; (*b*) horizontal line of fluid; (*c*) slight displacement of the heart to the right.

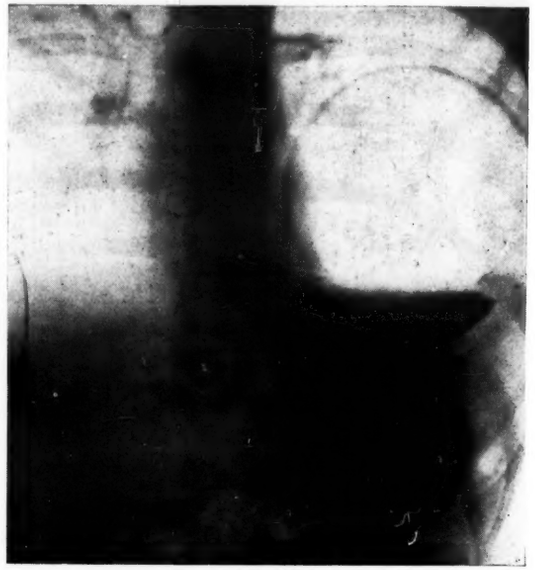

FIG. 2.—Stomach. Bismuth meal. Upright position, postero-anterior.

FIG. 3.—Stomach. Bismuth meal. Lying-down position. Note the food filling the dome in the chest.

R. F. YOUNG: HEREDITARY POLYDACTYLISM.

Right. Left.

J. N. LAIRD: FRACTURE OF END PHALANX OF FINGER.

FIG. 1.—Before treatment. Showing piece of detached bone in injured finger. Same finger on other hand for comparison.

FIG. 2.—After treatment. Detached fragment still seen. Sound finger for comparison.

with 7 recoveries and 35 deaths. The diagnosis was made beforehand in only six cases. Operation was usually performed for acute intestinal obstruction.

Giffin,[2] writing in 1912, and discussing the differential diagnosis between congenital hernia of the diaphragm (with prolapse of viscera through a gap in the diaphragm) and congenital elevation or eventration of the diaphragm, enumerates certain skiagraphic features which, he considers, help to differentiate the two conditions.

Giffin considers that: (1) A dome-shaped outline of the diaphragm is invariable in congenital elevation, whereas the shadow of the diaphragm may be irregular in hernia. (2) Mottled lung tissue may be seen through the clear area in the thorax in cases of hernia, but not in cases of elevation. (3) If the colon be found extending up into the chest and beyond the bow line, the case is one of true hernia. (4) Paradoxical respiratory displacement in which the affected side, usually the left, moves up on inspiration and down on expiration, is found usually in hernia. In congenital elevation the movements of the diaphragm are normal, though of reduced range.

Our study of the present case would appear to disprove much of this. Thus we found that mottled lung tissue could be seen through the clear area below the dome formed by the shadow of the diaphragm; the splenic flexure of the colon projected high up into the thorax, and although reversed diaphragmatic movement was doubtful before operation, yet it became well marked after the operation, and this although the diaphragmatic bow line was at a lower level.

The recognized nomenclature of these conditions is hardly satisfactory. Custom has decreed that cases of congenital defect or gap in the diaphragm, with prolapse of viscera into the pleural cavity through that gap, should be labelled "hernia," although the hernia possesses no sac; whereas to cases such as the one we now report, in which the thinned-out diaphragm forms a veritable sac, the term "hernia" is denied. It must be admitted, however, that to alter the terminology now would be to lead to considerable confusion.

The etiology of congenital elevation of the diaphragm remains obscure. The appearance of our histological preparations suggests that the intermediate fibrous tissue was essentially degenerated and fibrosed muscle, and this would suggest a congenital absence or lesion of the left phrenic nerve, and in this connexion the inequality of the pupils is interesting. But this does not carry us very far, since we are without a clue as to the cause of the nerve lesion.

The condition cannot be ascribed to a failure in the descent of the diaphragm, since the skeletal attachments of that muscle at its periphery were found to be perfectly normal, and its great elevation was plainly due to its intrinsic weakness and inability to withstand the upward thrust of the abdominal viscera.

A further radiological examination in this case, four weeks after the operation, showed that the collapsed lung had completely expanded. There was considerable thickening of the shadow cast by the bow line in the chest, and now paradoxical movements of the diaphragm were seen, the bow line in the chest descending during expiration and ascending during inspiration, while the movements on the right side were normal. The examination of the stomach now showed that the two sacs were no longer present. Three months later examination showed that adhesions were beginning to form, the movements of the bow line in the chest being now greatly restricted though still reversed.

Conclusions.

It would appear from this case that:

(*a*) Physical signs at the base of the left chest may be sufficiently well marked in diaphragmatic hernia to make the differential diagnosis from subphrenic abscess and pyopneumothorax a matter of considerable difficulty.

(*b*) Ultimate diagnosis must remain in the hands of the radiologist, but the points which have in the past been regarded as valuable in differentiating true hernia from eventration cannot be entirely relied upon.

(*c*) In the light of recorded cases and the ultimate acute abdominal condition which may, and probably will, supervene, exploration is desirable in these cases, unless it can be conclusively proved that the case is one of simple eventration.

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[1] C. L. Scudder, *Surgery, Gynecology, and Obstetrics*, vol. xv, 1912, 261–267. [2] H. Z. Giffin, *Annals of Surgery*, vol. lv, 1912, 388–397.

HEREDITARY POLYDACTYLISM.

[With Special Plate.]

BY

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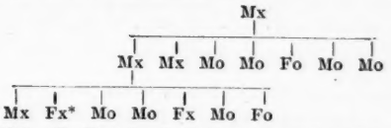
THE following case of bilateral double great toe presents some points of interest, more particularly from the operative point of view.

The genealogical table is very incomplete, and can only be traced to the grandfather of this patient. Prior to him it is reported that accessory toes have "descended down, but was a matter which was never discussed." The only deformity has been that of additional toes.



M=Male; F=Female; *=Patient; x=Deformity; o=No deformity.

With regard to the pathology, the *x*-ray appearance (see plate) confirms the opinion that the accessory digits are due to fission. On the right foot the proximal phalanges were fused for half their length; there is also incomplete fission of the metatarsal. On the left foot the separation of the phalanges was complete; the *x*-ray appearance also suggests that the more external or lateral toe is the more rudimentary.

Operation.

After due consideration it was decided to remove the medial toe on the right foot and the lateral toe on the left. The reasons for the latter choice were the distinctly more rudimentary nature of the lateral toe on the left foot, and that the resulting scar would be less liable to pressure from the boot. On the other hand, by removal of the medial toe better alignment could be secured. Further, it was of value to discover which method gave the more satisfactory result.

The result was very convincing. The patient was seen two months after operation. The right foot was completely satisfactory in use and appearance, and there was no irritation from the scar. The left foot was found much as before operation. Three months later the left foot had improved considerably, both in use and in appearance, but at the end of a day's work it felt very tired. A year after operation the left foot was still less satisfactory than the right.

I have to express my thanks to Dr. Duncan Macartney, in whose ward I treated this case.

THE CARELLI METHOD OF PERIRENAL INFLATION.

AN ACCOUNT OF A RECENT DEMONSTRATION AT THE FRENCH HOSPITAL.

[With Special Plate.]

BY

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A SHORT time ago Dr. F. G. Crookshank, physician to the French Hospital, while visiting Paris, was taken by Dr. André Leri to see a demonstration on pneumoperitoneum and the inflation of certain tissues, by Dr. Carelli of Buenos Aires. He was greatly impressed by the beautiful examples shown of gall-bladder disease, adhesions, cystic ovaries, Fallopian tube disease, and of pregnancy diagnosed at one month owing to the small but uniform increase in size of the uterus being made visible. What struck him most, however, was the entirely new procedure of *perirenal inflation*, an idea the carrying out of which is due to Dr. Carelli.

Dr. Carelli has demonstrated his methods in Berlin and Vienna, and is about to do so in the United States. Dr. Crookshank urged him to visit London, and he consented, though at considerable personal inconvenience. It was arranged that he should give an account of his methods at the Royal Society of Medicine, and I was asked to place my department at his disposal for an actual demonstration of

his kidney technique upon a patient. This I was most pleased to do. Dr. Carelli came to the French Hospital on December 8th, 1921, and, in the presence of several radiologists, performed a perirenal inflation.

The apparatus has been described elsewhere, as also the method: all I need do here, beyond referring very briefly to the principles involved, is to give some personal impressions.

By ordinary radiography the lower half of the kidney can be shown, provided that the patient is well prepared. Under favourable circumstances, the whole organ may be distinguished, but the outline is often vague and difficult to differentiate from the surrounding parts; this is more especially the case when disease, such as tuberculosis or malignancy, is present. Nor can one by the usual methods demonstrate the suprarenal capsule. On the other hand, the injection of gas into the peritoneal cavity does not fully define the outline, as the kidney is an extraperitoneal organ. Dr. Carelli therefore resorted to the production of an artificial emphysema around the kidney itself, and he informed us that he had carried this out several hundred times without accident of any kind.

Unfortunately there did not happen to be in the hospital at the moment any cases suitable from a medical point of view, so that the hope of demonstrating some actual pathological condition had reluctantly to be abandoned. However, with some difficulty I induced a normal subject to submit to the procedure.

Method of Procedure.

The subject was made to lie face downwards on the *x*-ray couch, and Dr. Carelli first took steps to find the transverse process of the second lumbar vertebra. This he did (1) by tracing the last rib to its junction with the spine and taking a point 2 cm. below the angle and an equal distance from the middle line (the 2 cm. is of course an average measurement only); (2) by counting the spinous processes upwards from the fourth lumbar and taking a point midway between the second and first, as giving the required level.

The patient was a man of average build, weighing 11 st., and his bony landmarks were not difficult to feel; but Dr. Carelli explained that, in the case of a stout man, it is necessary to localize the process according to some of the well known methods used in the case of foreign bodies.

The site of the second transverse process having been ascertained, the skin was swabbed with iodine, and a fine platinum needle about 10 cm. long was pushed in vertically until brought to a stop against the bone. This is landmark number one. Up to this point the patient felt nothing other than the prick of the needle. Having called our attention to the fact that the needle was actually against the process, Dr. Carelli proceeded to alter the direction of the thrust—the point slightly forward and a little outwards, so that it slipped past the obstruction. He pushed the needle in until he believed that he had reached the perinephric areolar tissue. (The needle appeared to be buried to the extent of about 6 cm.) He then waited a moment to see if any blood came out through the needle. Had this occurred, it would have meant that a vessel was punctured, and a reinsertion would have been necessary. This is point number two. Having satisfied himself as to this, he next connected the needle with the manometer of the oxygen container. The latter is similar to the apparatus used for artificial pneumothorax, and need not be described. The manometer readings constitute a third, and a very important, point in the technique. As soon as the connexion was made one saw the column of fluid move up with inspiration, down with expiration—the opposite to what would have happened had the needle been in the pleural cavity. It appears that sometimes the manometer column does not move even though the needle point is in the perirenal space. If no movement occurs, and the needle seems to be at a proper depth, a few centimetres of gas should be very carefully introduced, when the manometer will give the usual indications. Should the needle point be in the muscle, pain will be produced at once, and the occurrence of pain (other than a dull ache) is always an indication that a retrial must be made.

Having pointed out these facts to us, Dr. Carelli closed the manometer connexion and opened the stopcock connecting the needle with the oxygen chamber. He then proceeded to inject the gas very slowly. The patient complained of an increasing ache in his loin, and asked for the injection to cease after it had reached about 500 cm. Dr. Carelli said this was sufficient in most cases; he stopped the pump and pulled out the needle. The latter is of such fine bore that the track closes immediately.

Dr. Carelli's usual procedure is then to turn the patient on to his back and take plates from above with some degree of compression. I asked if we might first screen, and we did so. The kidney, like an island in a lake of air, was plainly seen by all, and any gross changes in its size and outline could have been readily seen. A plate was then taken in this position—that is, tube below, patient on face.

The patient was now asked to turn over, and did so without much apparent discomfort. A plate was taken with the tube above, the patient on his back; he did not object to a moderate amount of compression.* He got off the *x*-ray couch unaided, and Dr. Carelli made him bend his back in various directions to show that the remaining discomfort was slight.

The patient walked up some steps and along a corridor to a waiting taxi, and I took him to my rooms, as I wished to secure some radiographs with my own apparatus. A preliminary screen examination, one hour after the original injection, showed no apparent diminution in the inflated area. Oxygen had been used, as it was the only gas available. Dr. Carelli himself always uses CO_2 because it is absorbed within an hour. But for the beginner oxygen presents certain advantages.

To sum up my personal impressions:

The essential points of the technique are—(1) Use of a fine needle; (2) accurate location of the transverse process of the second lumbar vertebra; (3) proper direction of the needle after it has struck the process; (4) use of needle *open* so long as it is being advanced: this permits observations of punctured blood vessels; (5) sound judgement as to depth of insertion; (6) determination of entrance of needle point into perirenal tissue by manometer readings; (7) slow injection of gas; (8) quantity not to exceed 500 cm.

As to indications for use, any case in which there are signs or symptoms suggestive of kidney trouble, and in which clinical and ordinary radiographic examination does not completely clear up the diagnosis, should be investigated by this method. Alterations in shape, size or density are at once made clear, also calculi too small or faint to show in the usual manner. A wide field should be the investigation of alterations in the *adrenal body*—thus the method is not limited to strictly urological cases, but should be used in elucidating certain disorders of the ductless glands.

As to risks, there may be a theoretical possibility of setting up perirenal cellulitis, but no suggestion of any ill effect has occurred in Dr. Carelli's practice. On the other hand, the procedure may turn out to have therapeutic uses, on the lines of Colonel Rost's paper in the BRITISH MEDICAL JOURNAL of December 10th, 1921. Personally, having carefully considered Dr. Carelli's radiographs, and seen his procedure upon the living subject, I have no hesitation in recommending the method as one of very great value.

DEEP X-RAY THERAPY IN MALIGNANT DISEASE.

*NOTES OF A VISIT TO ERLANGEN.**

BY

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DURING a visit to Erlangen last September I was able to make certain observations which I propose to relate. I will consider the principles underlying this form of *x*-ray therapy under three heads: (1) Physical, (2) biological, (3) therapeutic

1. *Physical.*

Wintz defines his unit skin dose (U.S.D.) as that dose of rays, generated at a special voltage (180,000 to 200,000 volts) by a special tube, and filtered through 0.5 mm. zinc, which, at 23 cm. distance from the skin, produces on the area treated a red blush after five to eight days, and distinct tanning after four weeks. This dose he calls 100, and he expresses in percentages the amount absorbed, and therefore active, at varying depths below the surface. He estimates these percentages by the iontoquantimeter of Szilard, which depends for its action on the fact that electrically charged air is discharged by *x* rays falling thereon at a rate directly proportional to the quantity, irrespective of quality—that is hardness—of such rays. It consists of a heavily insulated wire, one end of which passes into a closed cardboard chamber (of Bergmann's camera) like a large test tube. The other end is connected to an electroscope, one leaf of which is fixed, and the other held lightly against it by a fine hair-spring. When the whole is charged by a small influence machine the leaves separate. If now *x* rays be allowed to fall on the camera the air therein is discharged and the leaves come together. The time taken by the movable leaf to pass over a scale lying under it is taken as a comparative measure of the amount of rays falling on the camera. For example, if filtered rays fall direct on the camera, and the electroscope leaf takes 9 seconds to travel over the scale, or in other words to discharge the air in the camera, and if now a box of water, which has the same coefficient of absorption of *x* rays as the human tissues, of a thickness of 10 cm., be interposed between the *x*-ray tube and the camera, and it is found that the time taken is 54 seconds, the ratio of the amount of rays received by the camera in the

* Substance of a paper communicated to the Gloucestershire Branch of the British Medical Association.

two cases is 54 to 9, or 6 to 1; that is to say about 17 per cent. is still active after passing through 10 c.cm. of water. Such an instrument can be used to obtain an accurate indication of the active rays passing through any desired thickness of water or human tissue.

The bundle of rays given out from an *x*-ray tube consists of waves of varying lengths. The softest rays have a wave length of 1 Angstrom unit (A.U.), which is taken as the unit of wave length measurement, and the hardest are 0.25 to 0.14 A.U. The penetrating power of the softer rays, though they have biological activity, is slight and varying, and the aim of Professor Wintz has been to obtain a radiation that would be penetrating and homogeneous.

To obtain the first of these two qualities it was necessary to secure an *x*-ray tube that would not only emit a ray bundle which contained the maximum of hard, that is penetrating, rays, but this tube must be capable of sustaining a steady output of these rays for several hours on end. This has been secured, both in the form of the Coolidge tube, and a special form of self-hardening gas tube, with an ingenious method of automatic regulation, which secures the maintenance of a fixed hardness for many hours. To secure an output of these hard rays it is necessary to pass through these tubes a current of far higher voltage than we have been in the habit of employing hitherto. The optimum voltage, taking many other factors into consideration, including the greatly enhanced cost and destructibility of tubes according to the increased voltage, has been found to be 180 to 200 kilovolts; that is, if at these voltages the absorption of rays at 10 cm. deep is 18 per cent. of the unit skin dose, it is only 19 per cent. at 250 kilovolts. The special apparatus devised to give this output, and to maintain it for long periods without breaking down, differs from those in general use in that the latter are designed to pass the maximum current through a medium soft tube for a short time, while the Erlangen technique requires the passage of a small quantity through an intensely hard tube at a very high voltage for long periods.

If dosage is to be accurate it must be capable of being measured—that is to say, it must be possible to state in terms of percentage what proportion of the unit skin dose is absorbed, or active, at varying depths in the tissues. To attain this the ray must be practically homogeneous, a ray, that is, which has been so thoroughly filtered from the rays of longer wave length that, in its passage through the human tissues or other media, it is not further changed in *quality*, or, as a corollary, is absorbed in fairly uniform percentages by each equal amount of the tissue or other substance. This homogeneity is obtained by filtration of the ray, and Wintz states that with the special gas tubes referred to above it can be secured by using a filter of 0.5 mm. of zinc (= 12 mm. aluminium); in tubes of the Coolidge pattern working at the same voltage and with the same equivalent spark gap it is necessary to use 4 mm. of aluminium in addition to the 0.5 mm. of zinc. When these hard rays pass through the tissues they undergo a weakening, or loss, through each successive centimetre. This loss is made up of absorption *plus* dispersion; dispersion takes place through the "secondary ray." Wintz divides these rays into three groups:

1. *Beta rays*, which are actually formed in the tissues; they have a small range of action, but are, however, extremely potent, and play a very important part in deep therapy.
2. *Fluorescent rays*, which are very soft, are caused by the rays impinging on the filter or skin. In deep therapy they can be neglected unless the filter is placed directly on the skin.
3. *Scattered rays*, which have the same quality as the primary ray, and may be regarded as automatically generated additions to this ray. They are the most important of the secondary rays.

Their generation is increased as the voltage increases, as the diameter of the bundle of incident rays is increased, and as the rays penetrate deeper and deeper into the tissues.

These facts can each be proved by first calculating what should be the active dose at any given depth under given circumstances: if the accuracy of these figures be tested by the iontoquantimeter it is found there is a definite error, and that the actual is greater than the calculated amount. This error is due to the progressively increasing action of the secondary rays. It is found that the relative absorption at a given depth is increased the further the anticathode is removed from the skin. But this increase is obtained only by greatly augmenting the time of exposure. For example, if the U.S.D. is reached in 35 minutes at a distance of 23 cm. it will require 165 minutes at 50 cm. and 372 minutes at 75 cm., or over 6 hours, because the intensity of *x* rays, like that of light, varies inversely as the square of the distance. Nevertheless, in comparatively superficial cancers, for example, scirrhus of the breast, vulva, etc., where the cross-fire method of application is difficult or impossible, where the tumour is very large, or where it cannot be accurately located, this method of application is often necessary.

Wintz states the time of irradiation is not shortened by increasing the quantity (milliampèrage) of current passing through the tube. The optimum is about 2 milliampères, as appears from the following table, for a Furstenan Coolidge tube:

M.a. through Tube.	Percentage Dose at 10 cm. deep.
1.0	24.2
1.5	24.0
2.0	24.2
2.5	23·4
3.0	23.0
4.0	21.0
5.0	19.0
6.0	18.0

It has been argued that because the rays are so hard they penetrate without action, but the fact seems to be that it is because the rays are hard that they set up the important secondary, or scattered radiations. In this country we usually employ 4 to 6 mm. aluminium to filter the rays, instead of the equivalent of 12 to 16 as at Erlangen, and the voltages used are too low to generate them in sufficient quantities.

As to the relation of radium to deep *x*-ray therapy, it is to be noted that the action of radium is local, and does not extend beyond, at the outside, 3 cm. from its source. It follows, therefore, that to attack a tumour of any size a number of tubes must be buried in the growth, which will each produce an intense local necrotic action, but its area of influence rapidly diminishes till, at about one inch away, the dose received by the cancer cells is no longer lethal, but may be actually stimulating. If radium could be obtained in larger quantities it might be different, but as things are its use at Erlangen has been entirely abandoned, save where a purely local action, as in a malignant stricture of the oesophagus, is required.

2. *Biological.*

The theory on which the efficacy of *x* rays on malignant growths and on ovarian tissue depends has hitherto been based on the action of the rays in splitting up lecithin—in which cancer cells are exceptionally rich—with the liberation of cholin, an intense poison, which when set free in the cells kills them. Wintz has found that with his technique, and calculating the U.S.D. at 100, the percentage required to destroy the following tissues is—for

Carcinoma cells	100–110 per cent.*
Sarcoma	60–70 ,,
Tuberculous tissue	50 ,,
Ovarian cells (to produce amenorrhoea)	35 ,,
Bowel (normal)	160–170 ,,
Muscles (normal)	170–200 ,,
Irritation dose for carcinoma	about 50 ,,

* Minimum, 50 per cent.

The following theory has been evolved by Dr. W. J. Turrell, of Oxford. It fits in with the work of Dr. Rigaud, Director of the Biological Laboratory of the Paris Radium Institute, and I am much indebted to Dr. Turrell for permission to mention it before his forthcoming work—in which it is more fully elucidated—is actually published.[1]

Kohler has obtained microphotographs of the dividing nuclei in the gill plates of the salamander by ultra-violet rays, and has shown that the chromatin substance in these nuclei is so opaque to waves of very short length as to appear as though it were deeply stained; he has proved the complete absorption of these short wave lengths by the chromatin. Light is only active when it is absorbed and it is only absorbed when its wave length is in resonance with—that is to say, when its vibration corresponds with—those of the atoms on which it falls (law of Grotthus).

Further, Rigaud has shown that certain cells are very sensitive to *hard x* rays and the gamma rays of radium. A subcutaneous lymphosarcoma can be destroyed without producing any skin changes except the falling out of the

hairs; this result must be due to a selective action of the rays on two particular types of cells—the sarcoma cells and the generating cells of the hair follicles. This selective action appears to depend, not on the nature of these cells, but to be due to certain states or physiological moments in their life, the best known of which is the state of reproduction. The special radio-sensibility of cancer cells is due to their indefinite reproduction. The essence of reproductive power is in the chromatin, and hard rays poison chromatin, acting probably by a process of oxidation or reduction, so setting free a ferment or toxin. If this toxin is liberated in small quantities—as by a slight action of the rays—the action on the other cells would appear to be stimulating; if the action is profound, cell death follows.

This hypothesis of a toxin explains the latent period before the effects of *x* rays manifest themselves, and as the presence of a toxin in the blood always tends to the formation of a specific antitoxin, there is here an explanation of the fact that in such constitutional diseases as leukaemia much benefit is often derived from the first course of raying, while each subsequent course seems to be less and less efficacious. It is known that when the blood of a leukaemic patient is submitted to *x* rays leucopenia follows, and attains its maximum after an interval of five to ten days. It is probable that this leucopenia is due to a leucolysin caused by the toxin formed in the blood in consequence of the action of the rays on those nucleated white blood corpuscles whose nuclei are in a specially radio-sensitive state at the time they are exposed to the rays, that is to say, those whose chromatin granules are undergoing karyokinesis.

Curschmann and Gamp have proved that the serum of a leukaemic patient, subjected to repeated raying for a long period, would, if injected into the blood of another leukaemic patient who had not been rayed, cause a destruction of leucocytes, but that the leucocyte count returned to what it was more rapidly after each injection.* Can this be explained save on the assumption of the formation of a "toxin" and "antitoxin"?

If further research serves to establish this theory as the true explanation of the action on the tissues of waves of very short length, does it not open the question whether all our methods of *x*-ray therapy—at any rate, as far as attacking deeper structures is concerned—have not been fundamentally wrong? It has been the custom to use divided doses of medium hard rays spread over a period, each dose being far short of the full lethal dose. In these circumstances have we not frequently only succeeded in creating so much toxin as to stimulate the remaining cells to further activity, and, by allowing time for the production of the antitoxin, to thereby minimize or destroy the value of subsequent applications?

Another intensely interesting speculation which arises is whether it would be possible to ray carcinomata, either artificially produced or naturally occurring in animals, and thus load the blood of the animal with the specific toxin, which could then be injected into human beings, either as a prophylactic or curative agent. There is a strong analogy between such a procedure and the production of diphtheria antitoxin in horse serum. A further question is whether it is possible, prior to treatment, to secure that the maximum number of the growing cells of the tumour should be in the physiological moment of reproduction. This might be effected by giving preliminary small doses of rays designed to liberate so much toxin as should be a stimulant. Latterly Wintz had been administering to all his malignant cases a preliminary copper ionization, with a view to the introduction of copper ions into the growth, so as to secure an increase of secondary radiations in the tumour. The majority of electro-therapists are agreed that it is impossible to introduce ions from without deeply into living tissue; yet Wintz claims benefit from his ionization. May it not be that, just as intra-uterine, or even percutaneous applications of the constant current will often cure amenorrhoea, or delayed or scanty menstruation, by stimulating the cells of the Graafian follicles, so the passage of a constant current will stimulate karyokinesis in the cancer cells, and thus bring the maximum number possible into a radio-sensitive condition? For this purpose only a mild, and therefore painless, current would be required.

3. *Therapeutic.*

This deep therapy has been used successfully in the treatment of carcinoma, sarcoma, tuberculous affections of the peritoneum, bones, glands, etc.; to produce amenorrhoea and shrinkage of the growth in fibroids; in leukaemia and other blood diseases, and in hypertrophy of the prostate.

It is possible to determine by the iontoquantimeter the exact percentage of the U.S.D. that is active at varying depths in the tissues. Thus, with the U.S.D. at 100, and with apparatus and tube functioning well, the active dose at 10 cm. deep is about 18 per cent. Now, the uterus is situated at about the centre of the circumference of the lower abdomen, and approximately 10 cm. from the skin. If we take the lethal carcinoma dose as 110 per cent. U.S.D., it is obvious that, if treatment be applied from six or seven ports of entry, the rays being directed on to the uterus, the skin in each area will only receive the U.S.D., but at the centre of this converging bombardment a total of 6×18 or 7×18—that is, 108 to 126 per cent.—will be reached. Similarly, as the dose at depths other than 10 cm. is equally well known, it is but a matter of calculation, and consequent arrangement of the cross-fire, to secure the "carcinoma dose" on to any malignant disease so situated that the cross-fire method can be employed.

In malignant disease situated in or closely under the skin and where, therefore, this cross-fire method is not available, the problem is totally different. Let it be supposed that the case is one of scirrhus of the breast, or of vulvar carcinoma, where the disease extends only 3 to 5 cm. deep. Every cell of such a growth must receive at least the minimum dose (90 per cent. U.S.D.), but, with the 23 cm. focus distance and field of 6×8, the dose received by the cells at the lowest part of the growth is only about 60 per cent., and the irritation dose, which causes an increase in the growth of cancer cells, is just about this figure.

Seitz and Wintz have found by experiment:

1. That increasing the distance of the anticathode from the skin increases the percentage of rays that are active at a given depth. Thus at 3 cm. deep, and using a field 6 × 8 cm., the percentage of rays absorbed is as follows:

If the anticathode is	23 cm. from the skin ...	60 per cent.
,, ,,	30 cm. ,, ,, ...	66 ,,
,, ,,	50 cm. ,, ,, ...	70 ,,

2. They have further proved that the depth dose is improved by increasing the size of the impact field. Thus at 3 cm. deep, and at 30 cm. distance, the percentage absorbed is as follows:

With an impact field of	1·5 × 2 cm. ...	47 per cent.
,, ,,	6 × 8 cm. ...	66 ,,
,, ,,	10 × 15 cm. ...	77 ,,

3. By a combination of these two factors—that is to say, by increasing both the distance of the tube from the skin, and also the impact field, it has been proved that at 3 cm. deep:

Size of Impact Field.	Distance of Anticathode from Skin.	Amount of Rays Absorbed.
9 × 12 cm.	30 cm.	74 per cent.
10 × 15 cm.	50 cm.	86 ,,
9 × 12 cm.	80 cm.	86 ,,
10 × 15 cm.	80 cm.	90 ,,
9 × 12 cm.	100 cm.	90 ,,
10 × 15 cm.	100 cm.	93 ,,

It is thus seen that it is possible to reach the minimal "carcinoma dose" even in the lower lying cells of superficial cancers by greatly increasing both the field of impact and the distance of the anticathode, but this can only be attained by enormously augmenting the time of exposure. If at 23 cm. the U.S.D. is reached in forty minutes, at 80 cm. the time required will be approximately eight hours. As far as possible the dose lethal to the cancer cells is given at one sitting, and the after-effects on the blood are combated by injections of one of the arsenic preparations.

The most important matter is to decide how far this treatment is an adjuvant to, or substitute for, operation. At Erlangen operation is practically entirely dispensed with, save in cases of primary carcinoma of the ovary, except where it is required for a subsidiary purpose—for example, colostomy before treating a carcinoma of the rectum, to ensure rest to and absence of irritation of the part, or gastro-enterostomy, or other short-circuiting operation, where obstruction is threatened.

Personally, I am uncertain whether at the present time the results of this deep *x*-ray therapy have yet reached such a point of certainty that it is advisable, in the patients' interest, to dispense with operations, but I am convinced that the severity of the operations can be minimized. In cancers of the uterus and cervix I believe the best treatment to be pre-operative raying. After six weeks the patient should be re-examined, and the local disease will then

* Wintz has succeeded in inducing amenorrhoea in a patient suffering from menorrhagia by a similar course of injections.

probably be found to be on the road to cure, and the parametria can be attacked. If operation be necessary, certainly Wertheim's is not required.

In scirrhus of the breast I believe the local removal of the growth to be desirable, but not the removal of the axillary glands. By taking away the filters one tends to spread metastasis, but these cases should have a pre-operative and a post-operative raying.

Cases of malignant disease may, from the point of view of treatment, be divided into four classes: (1) Easily operable; (2) operable, but where there is every probability of there being inoperable extension of the primary growth; (3) hopeless for operation owing to position—for example, head of the pancreas, spinal cord, etc.; (4) inoperable owing to fixation of organs, extension of the disease, etc.

In Class 1 I believe in operation, followed by deep raying, and in Classes 2 and 3 in deep therapy alone; in Class 4 it is very difficult to decide. Nothing, save perhaps alleviation, can be hoped for from deep therapy, and, after the position has been fully explained to the patient or his family, the decision must rest with them.

When I was in Erlangen I asked for statistics, but was told that, at any rate as far as malignant cases were concerned, it was as yet impossible to give definite figures. The reason is evident, for this form of treatment was begun only a short time before the war broke out, and was then in the purely experimental stage. During the war, though Professors Seitz and Wintz were able to carry on some experiments, they were not able to obtain all the necessary instruments to carry out treatment on a large scale. Investigations were pursued to ascertain the best form of generating apparatus, of filters and of tubes, to find out the exact dosage that would ensure the cessation of the menses, and would cause the death of malignant and other cells. The former result has been definitely attained. Wintz has published a report of 500 cases of uterine haemorrhage, due to fibromyomata, the menopause, and other causes, which have all been cured by one single treatment in each case. Dr. Ernest Stark, practising the same treatment in the provincial clinic at Weiden, reports 19 cases with only one failure, which was attributed to the use of an insufficiently powerful apparatus.

The failure or success of applications for such purposes is almost at once evident, but the position is different when the results of the treatment of malignant disease are under consideration. To speak positively on the subject of "cure" the standard of five years' freedom from recurrence after treatment is generally accepted; consequently cases treated subsequent to 1917 must be ruled out. But it was only about this date that the technique was perfected, or that sufficient instruments, tubes, etc., could be secured to treat a number of patients sufficient to afford the required data.

Again, it is to be remembered that the earlier a malignant case is subjected to deep *x*-ray therapy the better is the prognosis. But it is just these early cases that are also best from a surgical standpoint, and it is only natural that some time must elapse before an old and accepted treatment is supplanted by a newer one. Patients with cancer of the female generative organs go direct to the gynaecological clinic, of which Professor Wintz is the director, and can therefore be rayed when in the early stages of the disease, but with this exception the majority of cases of malignant disease treated by deep therapy are either primary inoperable cases, or patients with secondary deposits or relapses. These cases are naturally more unfavourable than early primary ones, and hence statistics would not be nearly as good as if it were possible to select purely suitable patients—as surgeons are able to do.

I saw several cases of malignant disease of the cervix and uterus which had been rayed as long as three and a quarter years before, in which there was no evidence of the disease to be detected on examination, and the patients had put on weight, felt well and were able to work—in fact, were apparently "clinical cures." I saw a man who had had a large fixed tumour the size of half a cocoanut on the left side of the neck; an excised piece had shown it to be a lympho-sarcoma. He had been rayed twice, the first time ten months earlier. When I saw him the lump was about the size of half a tennis ball, painless, and freely movable. It was apparently simple fibrous tissue. The man had lost his pain and dysphagia, and was well and working. A case of periosteal sarcoma of the head of the humerus showed, both clinically and by *x* rays, an equally good result, as did a case of scirrhus of the breast treated two years previously. In none of these cases was any operation performed, except the removal of a small piece for diagnostic purposes.

The chief assistant at Wertheim's clinic in Vienna, who was at Erlangen at the same time as I, told me the results of this treatment in cancer of the uterus or cervix are so good that Wertheim's operation is gradually being abandoned in that clinic; it must, however, be remembered that owing to the central position of the uterus in the body it is ideally placed for "cross-fire" application, which is the most favourable method.

It has not been possible to read all the literature—even if one could obtain it—which has in recent years been published in Germany on this deep therapy. Suffice it to say that analyses and criticisms of the method have been produced, not only by the Erlangen school itself, but also by such authorities as Wernekrose of Berlin, Martius of Bonn, Fraenkel of Freiburg, Döderlein of Munich, Stark of Weiden, and many others. In most cases both successes and failures are impartially described and efforts made to explain the one or the other. From what I have read and what I learnt from those with whom I talked on the subject (and while in Erlangen I had the chance of discussing the subject with the professor of gynaecology in the University of Barcelona, with the physicians in charge of the *x*-ray and radium department in the University of Stockholm, and with the chief assistant at the clinic of the late Professor Wertheim of Vienna) I have formed the opinion that all who have had *practical experience* of the Erlangen treatment are most favourably impressed by it. As far as I can see, its detractors are those who have prejudged it on theoretical grounds, or on account of bias because of sensational publications.

The general inferences to be drawn from publications—and among the writers are surgeons as well as radiologists—and from my own impressions may be briefly summarized as follows:

1. That this form of treatment is a fundamental and epoch-marking improvement on pre-existing methods of *x*-ray therapy, and is the technique to be adopted in all cases (other than purely superficial skin lesions) where this form of therapy is indicated.

2. That, as in all other treatments, the earlier a suitable case is treated, the better are the results.

3. That it is the treatment of choice in all cases of menorrhagia or metrorrhagia in patients over 38, provided that suppurative disease of the tubes or ovaries be excluded. Eden and Provis (*Lancet*, February 12th, 1921) are in agreement with the use of *x* rays in these conditions, though they differ from the German school in excluding cases of malignant disease. It must, however, be remembered that they were not employing the Erlangen technique.

4. All the foreign authorities agree as to the immense value in every malignant case of either pre- or post-operative raying, or both, according to circumstances, and the majority—excluding Professors Seitz and Wintz and their immediate disciples—recommend operation according to the conditions that I have laid down above.

5. Great use is made of deep *x*-ray therapy in tuberculous disease of the glands, bones, joints, bladder, and peritoneum as an auxiliary to other treatments. If in tuberculous glands there be a caseous focus, such glands will break down under the treatment.

Personally I am convinced that this new therapy has opened up a fresh avenue of treatment, and has enormously increased the field for the curative use of *x* rays. Much was hoped for, and much disappointment has been experienced in the past from *x*-ray therapy in malignant and other diseases, but the researches of Professors Seitz and Wintz into the production of homogeneous rays and their accurate measurements, and into the absorption of these rays at varying depths in the tissues, and the practical results obtained at Erlangen and elsewhere have, I believe, carried us far along the road the end of which is the satisfactory treatment of that which was previously considered hopeless, and has simplified and expedited the cure of many other conditions—for example, fibroids and menorrhagia—the treatment of which has, up to the present, lain solely in the province of surgery. The British Association for the Advancement of Radiology and Physiotherapy, in issuing a warning to the public in connexion with the Erlangen treatment for cancer, said:

"We are, however, of the opinion that a closer co-operation between the surgeon and the radiologist would lead to a clearer appreciation of the value of radiation in treatment, and that, in all cases, both surgery and radiation therapy should be considered with a view to making the fullest use of both."

Advance will only come by this closer co-operation. It is not enough for the surgeon to order pre-operative or post-operative raying as his special predilection dictates. Deep therapy opens a newer and a wider field, and establishes the position of the medical radiologist as one to be called into consultation with the surgeon over a case, and to co-operate with him in deciding whether it is one for operation, for deep therapy, or for both.

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CASE OF TRYPANOSOMIASIS FROM PORTUGUESE EAST AFRICA APPARENTLY CURED.

BY

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BEFORE one can speak of a definite cure in human trypanosomiasis some years of perfect health must elapse after the cessation of all treatment. Suggestions, such as have recently been made, of curing patients by one injection into the spinal canal of salvarsanized serum are, to say the least, of doubtful value and tend to indicate that the maker of them is ignorant of the literature of the subject. Judged by the test of time indicated above, however, there are quite a number of cases of infection with *Trypanosoma gambiense* that have been treated in England with successful results and are still alive years after their infection. (Cases of Manson and Daniels.) It is right to state, nevertheless, that this happy result has not been attained in all cases even of that infection; we know of two patients who have died recently of sleeping sickness, even though well treated over prolonged periods of time.

In infection with *Trypanosoma rhodesiense* (including under this term Portuguese East African infections) the prognosis is very grave, and down to the present date perhaps only one case of a European[1] can be said to have been cured (Mr. H., a case of Dr. Daniels). We have recently heard that this patient is at present farming in Rhodesia and is enjoying perfect health. The next best result we know of to this was the case of G. (under the care of Sir Patrick Manson and Dr. Daniels), who lived for two years and three months after infection. Though thoroughly treated with antimony and atoxyl, this patient died of sleeping sickness with typical lesions in the brain.

We have now the records of another case, that mentioned in the title to our paper, who is still alive three years after acquiring the disease in Portuguese East Africa, and who is at present apparently well and in a good state of health. One of us (H. B. N.) saw this patient in Dar-es-Salaam in 1918 and has already published a note about him,[2] while later Dr. W. A. Murray, under the heading of "Notes on the Successful Treatment of a Case of Sleeping Sickness," gave further details of his treatment and stay in Durban up to the time when he was transferred to the South African Institute for Medical Research, Johannesburg, on October 8th, 1919.[3] From that time till April, 1921, when he was sent home to England, Dr. Watkins-Pitchford, the Director of the Institute, has had him under observation and has very kindly supplied us with the details of his stay there. Finally the patient reached England on May 17th, 1921, and came direct to the Hospital for Tropical Diseases, where he has been under our observation since.

History of Case.

The patient, as far as can be judged, was infected about October 9th, 1918, in the Lugenda River valley while on the march between Alto Molucue and Ngomano, Portuguese East Africa. On October 15th he reported sick with a temperature, but rejoined his battalion on the 19th. On the 20th he noticed a swelling in the right axilla and was admitted into Ndanda Hospital on October 25th with a temperature of 102° F. and treated as a case of malaria. From there he was transferred to Lindi Hospital (November 14th, 1918), where a patch of cutaneous erythema with infiltration was noticed in the right mammary region and a general adenitis was detected. An examination of the blood on the 16th by Captain Butler showed trypanosomes. On November 26th, 1918, the patient was sent to Dar-es-Salaam Hospital, where he was seen by one of us (H. B. N.). On arrival the patient was anaemic and stated he had lost weight. The pulse was rapid, the spleen just palpable. An erythematous rash was seen on the trunk. There were one or two well-marked rings, but generally the rash was of a blotchy character. No local oedema or adenitis was found. Kerandel's symptom was absent. There were no eye symptoms. The temperature on admission was 100.8° F.

Examination of the blood: Total red cells, 2,672,000; total white cells, 4,800: lymphocytes 26 per cent., large mononuclears 17 per cent., polymorphonuclears 51 per cent., eosinophiles 6 per cent. Scanty trypanosomes were found. Treatment with intravenous injections of antimony was at once begun, but the patient did not stand the first injections at all well. On January 9th, 1919, he was transferred by hospital ship to Durban, where he passed under the care of Dr. Murray. On admission there the following points were noted by Dr. Murray.

Dr. Murray's Notes.

Weight 11st. 4lb., one stone below normal. Weakness is marked, but he can walk about, and sleeps and eats well. There is no oedema, no hyperaesthesia of muscles on pressure (Kerandel's sign), no cramps or pains in bones. The heart appears to be normal; urine normal; spleen enlarged. There is general glandular adenitis, with a red rash over the right chest.

Blood smears: Numerous trypanosomes present, also B.T. malarial parasites. Blood count: Red cells, 3,300,000; white cells, 5,500; haemoglobin 55 per cent. Differential count: Polymorphonuclears 40 per cent., large mononuclears 20 per cent., lymphocytes 24 per cent., eosinophils 6 per cent., mast cells 1 per cent., myelocytes 2 per cent., leucoblasts 2 per cent., broken nuclei 5 per cent.; a few normoblasts were present. Blood pressure 120 mm. Hg.

A rabbit and guinea-pig were injected on January 28th, 1919, each with 1 c.cm. of the patient's blood. The rabbit showed trypanosomes after thirteen days, and died in ten weeks. The guinea pig first showed trypanosomes after eleven weeks, and died in nineteen weeks. The trypanosomes were polymorphic, and posterior nuclear forms were found. A prolonged course of treatment was commenced on January 21st, 1919, as recommended by Dr. Newham (see below), and this was kept up till the patient was sent to Johannesburg.

Dr. Watkins-Pitchford's Notes.

The patient was admitted into the South African Institute for Medical Research, Johannesburg, on October 8th, 1919. Weight 11 st. 1 lb. He was kept under continuous observation and treatment until May 7th, 1920, by Dr. J. H. Harvey Pirie. The examination of the daily blood specimens was undertaken by Dr. Annie Porter, who found a few *T. rhodesiense* (many of which were degenerate forms) upon the day of admission and upon each day, with one exception, up to October 17th, 1919. The numbers were small, 3 per cubic millimetre at most. Although daily examinations (thick films) have been made from the last-mentioned date until April 8th, 1921, no further trypanosomes have been detected.

It is worthy of note that trypanosomes had not been detected in the blood for forty days prior to admission to the institute, the last occasion upon which Captain Murray, of Durban, found them being August 29th, 1919. Although treatment had not been intermitted during these forty days, trypanosomes were found, as stated, upon each of the first eight or nine days of the patient's stay in the institute. The question arises whether the change in altitude and temperature associated with his transference from Durban to Johannesburg had brought about the reappearance.

On May 7th, 1920, the patient was allowed to go home (Premier Mine, near Pretoria), the treatment being continued by Dr. Gow, daily blood specimens being sent to the institute for examination. The patient again attended the institute, this time as an out-patient, from December 18th, 1920, to April 8th, 1921.

The administration of soamin and of antimony oxide were stopped shortly after his admission on October 8th, 1919, tartar emetic only being given. This was administered intravenously in 2 grain doses twice a week until the end of October, 1920, and once a week from then till April 8th, 1921.

His total medicamentation with arsenical and antimonial preparations from the date of commencement, November 19th, 1918, four days after trypanosomes were first discovered, till April 8th, 1921, has been:

Atoxyl	13 grains
Soamin	234 grains
Nucleoarsitol	13.5 c.cm.
Galyl	0.5 gram
Liq. arsenicalis—a little on hospital ship between Dar-es-Salaam and Durban	
Tartar emetic	363 grains
Antimony oxide	4.75 grains

The patient was also infected with benign tertian malaria when in East Africa. He had regular quinine administration during most of the time he was under treatment in Durban. Dr. Murray states in his notes of July 7th, 1919: "No malarial parasites were seen in blood films since January, 1919"; and on that date the administration of quinine was stopped.

No malarial parasites were found in the blood films while he was at the institute until, without any rise of temperature or other symptom, they were found in considerable numbers on March 17th, 1920, and in small numbers the following day. Quinine administration was recommended, and continued for a considerable period. Malarial parasites have not again been seen.

His weight at the cessation of treatment was 11 st. 3 lb., which is only a few pounds under his normal pre-war weight. During treatment he had been down to as low as 10 st. 3 lb. He did a

certain amount of office work after January, 1920, and the improvement in his mentality as the result of having some occupation was obvious. It was noticed, however, that he was very shaky and inclined to be "jumpy," and it was apparent that he was about reaching his limit of toleration of injections. During the whole time of the patient's association with the Institute his observation and treatment were entrusted to Dr. J. H. Harvey Pirie.

The patient left Africa on April 29th, 1921, and arrived in London on May 17th, 1921. He came direct to the Hospital for Tropical Diseases, where he has been off and on to the date when this paper was written (November, 1921).

On admission there was little, if anything, to note: no fever, no enlargement of glands, no splenic enlargement—in fact, no definite signs of the disease. It was resolved then to stop all treatment and watch very carefully the results, the patient in the meantime living an ordinary life, going and coming from the hospital from time to time, just like an ordinary person. Blood examinations were uniformly negative for trypanosomes and malarial parasites, and inoculations into guinea-pigs and rats gave negative results. The only thing that one could say was wrong was that the patient did not feel as strong as he used to, and there was a fine tremor just visible in the hands.

In July, 1921, during one of his spells in hospital, he complained one day of the sight in one eye; he was examined by Colonel R. H. Elliot, who reported that there was a patch of paracentral choroido-retinitis in the right eye, a condition, as far as we know, only twice before reported in human trypanosomiasis (a case of Sir Patrick Manson's, the first case of trypanosomiasis at the London School of Tropical Medicine, in 1902; and one by Morax in 1910 associated with cyclitis[4]). This observation is of very great interest, as it records a third case of this condition, though other eye lesions (for example, cyclitis) are not uncommon and have been described by Daniels and others. Whether the condition has existed from the beginning of the infection or came on later in the course of the disease is not clear.

The question now arises, Is the patient cured of his infection? It is difficult to say definitely whether this is so or not. One point against it is that the tremors of the hands seem to be definitely increasing and the general condition, though very good, on the whole does not appear in some ways to be perfect.

During the autumn months the patient was in the country and kept well, with no complaints. He stated on his return that he had had no fever whilst he was away, and had been able to play a hard game of tennis without in any way getting exhausted. He returned to hospital for another examination in November, and we got Dr. Gregg to do a lumbar puncture in order that an investigation of the cerebro-spinal fluid might be made.

The fluid obtained was perfectly clear, with no increase of pressure. Microscopically the cells were normal in number, a few lymphocytes were present, and there were no signs of trypanosomes. The Wassermann reaction of the fluid as well as of the blood was negative.

This would seem to indicate that cure has taken place, but it does not absolutely prove that this is so. All that remains, then, is to observe the case for a longer period of time before definitely coming to the conclusion that he is really free from his infection, and we propose to do this and not to give any more treatment for the present.

As the patient's home is in South Africa he is going to return there, and he will notify the authorities at the Institute for Medical Research at Johannesburg if any further symptoms develop. His future progress can also be controlled there, and it will be of great interest to see what that will ultimately be.

REFERENCES.

[1] *Lancet*, November 7th, 1919. [2] *Journal of the R.A.M.C.*, October, 1919. [3] *South African Medical Record*, November 8th, 1919, p. 326. [4] *Bull. Soc. Path. Exotique*, May, 1910, No. 5.

ACCORDING to the records of thirty-seven leading American insurance companies, the year 1921 was the healthiest in the history of both the United States and Canada. It is stated that during that year influenza almost disappeared from the United States and Canada, and that pneumonia decreased by 50 per cent. as compared with 1920. On the other hand, the mortality due to automobile accidents showed an increase of 15 per cent.; the number of deaths from this cause was in round numbers 10,000. Homicides and suicides also showed large increases, being four times more frequent than in 1920.

THE SIGNIFICANCE AND TREATMENT OF SOME ABNORMALITIES OF THE URINE IN CHILDREN.*

BY

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WHEN we are called upon to give a diagnosis in the case of a child, and to follow this up with prognosis and treatment, we seek for assistance from family and personal history, we study symptoms, and we determine facts. History may be elusive, is often imperfect, and sometimes unreliable; the recognition and valuation of symptoms is largely a matter of experience and opportunity, and, lacking these, perspective is imperfect. But the determination of facts is in the hands of every medical graduate, and one important means of search for facts is thorough examination of the urine. Certainly, in any doubtful or continuing illness general examination is incomplete without chemical and microscopical examination of the urine. In this paper I wish to discuss certain facts in urine examination and certain difficulties in the determination of their significance.

Bacilluria.

The first is a fact determined by microscopic examination of the urine—the finding of pus cells and motile bacilli. What is the significance of the fact? In the cases of healthy children, are motile bacilli and pus cells commonly present in catheter specimens of the urine? We may certainly answer, No.

But points of clinical difficulty arise in attempting to advance a step further. In apparently healthy children we rarely feel called upon to use the catheter for obtaining a specimen of urine for examination. If careful precautions as regards cleanliness, retraction of parts, asepsis, etc., are taken, do we find pus cells and motile bacilli present in the urine of healthy children? The answer here must be guarded, because we do sometimes find, in cases of perfectly healthy children, rare cells resembling pus cells and a scanty number of various micro-organisms, which in many, if not all, cases are probably present because of unavoidable contamination. But we may safely say we never find large numbers of pus cells and immense numbers of motile bacilli. While, however, this is true of perfectly healthy children, it is not true of certain children apparently in fair normal health.

I have at present under observation seven children whose mothers consider them in fair average health, who are, in the ordinary acceptation of the term, well, and whose urine, on regular microscopical examination, is found to be swarming with motile bacilli and to contain a distinct amount of pus. I also have reports of four other children, seen in private during the past year and not within the past three months, and who were carefully, thoroughly, and apparently successfully treated for acute pyelitis, and on recent examination of the urine I find that in one out of the four pus cells and motile bacilli are present in large numbers, although the child is apparently well.

It is quite certain that there must be a considerable number of children—probably mainly girls—who are "well" or "fairly well," or, it may be, "out of sorts," who are going about, with or without medical attention, and in whose urine motile bacilli and pus are present in quantity. What exactly is the condition? Why is it present? By what dangers, if any, is it attended?

The condition is not tuberculous and it is not due to calculus. There may be no urinary symptoms of any kind, but enuresis sometimes occurs. Renal efficiency is good. The urine is acid; it may show perceptible haziness with cold nitric acid, or it may not. When a fresh drop of urine is examined under the high power of the microscope, pus cells are seen in considerable or large numbers, and along with them great numbers of motile bacilli. If a catheter specimen is obtained and a report prepared by a laboratory, these bacilli are determined to be of the "coli" group, or "para-coli" or "meta-coli" or "pseudo-coli" group![1] In some cases cocci are also present. No casts are present, and usually no blood cells and no crystals. The general nutrition

* A paper read before the Liverpool Medical Institution, October 27th, 1921.

is fair, but the child is not fat. There is no fever. Constipation is, I think, always present, and it is often most intractable. There is often extensive caries of the teeth. The children, as a rule, are not undersized. All my cases have been girls.

We have to deal with a chronic infection of the urinary tract by bacilli of the nature of some form of the colon type. Catheterization of the ureters in young children cannot be carried out, and, consequently, it is not justifiable to define more accurately the locality of infection.

Important points we must bear in mind are these:

In 90 per cent. of cases in which the urine of *healthy* female infants under 2 years of age is drawn off by catheter under complete aseptic precautions, bacteria are found in it, mainly bacteria of the coli group.[2] Similar examination in cases at a greater age shows the urine to be sterile.

A temporary bacilluria is not uncommon in critical, acute, and continued illnesses accompanied with marked prostration.

Acute pyelitis occurs twice as often in babies as in older children.

A great deal of importance is laid on the relation between full control of the bladder sphincter in girls and bacilluria. The frequency of urinary infection by *B. coli* in female infants and the frequent occurrence of the symptom of enuresis in older girls in whom this infection can be noted is striking.

There has been much discussion as to the method of infection of the urinary canal. In female infants it may be impossible always to prevent an ascending infection, but obviously digestive disorder and diarrhoea must favour the passage. In older children, likewise, all marked digestive disturbances must favour infection by one means or another.

In many of the cases of the type of which I speak—chronic "colon" urinary infection—no definite history of an attack of acute pyelitis can be obtained. We do not know whether many of the cases have commenced acutely or not. In some probably a chronic course is run throughout with eventual cure. In some, acute pyelitis first attracts attention. In none is the general health really satisfactory, though it is often impossible to tell from consideration of the general health and physical examination whether bacilluria and pyuria are present or not. Microscopic examination of the urine alone shows, and such examination should be made in the case of every ailing child with doubtful or continuing disability.

If the condition is found to be present and the child "well" she may be considered "merely a carrier" or the type of bacillus present "non-pathogenic." But a child with long-standing continuance of pus and coli-like bacilli in the urine is one in imperfect health, who may at any time develop acute urinary inflammation as a sequel to comparatively trivial affections in practically any part of the body. We know litt e of the interaction of bacteria, and a chronic "coli" urinary infection can be powerfully influenced by totally different infections elsewhere. Further, it is possible that a reverse train of events may occur in some cases and the urinary infection produce far-reaching secondary effects.

When we turn to treatment we must of necessity divide it into two categories: (*a*) preventive, (*b*) therapeutic.

Preventive treatment consists in such dietetic and general hygienic measures as will ensure good digestion, a healthy mouth, normal evacuation of the bowels, and the absence of irritation or excoriation in the region of the perineum. The importance of such treatment from every possible medical point of view is of course self-evident, as it must form the basis of healthy childhood. Its proper carrying out, however, requires attention to many details, none of which should be neglected by the medical man. Its essence is correct diet and no septic foci.

Therapeutic treatment is at present greatly influenced by two conditions—namely, the infrequency with which urine is examined microscopically except in acute cases or cases with marked urinary symptoms; and, secondly, the prominence given in cases of acute pyelitis to treatment by alkalies, urinary antiseptics and vaccines.

The importance of microscopic examination of the urine I have already emphasized.

Acute pyelitis in infants, in the absence of pyelonephritis, can almost always be cured by sufficient dosage of alkali; urotropine and salol are useful in some cases, and autogenous vaccines are sometimes of value in cases of older children and in relation to acute attacks or relapses.

But in the cases of which I speak—the chronic cases with few and indefinite general symptoms—all such methods of treatment are extremely unsatisfactory. The only means of eradication of the firmly installed bacilli is the restoration to health of the various bodily functions. By all means let us use the above remedies as they may seem indicated in the individual case, but, above all, let us employ scrupulous care in our search for focal sites of infection, for the nature of disturbances of digestion, and for any other abnormalities whatsoever in the child. Let us devote our first attention to the securing of healthy orifices, healthy mouth and healthy intestinal canal, and we have taken the first secure step forward in what, even then, is often a long-drawn-out cure.

Presence of a Reducing Substance.

The second abnormality with which I wish to deal is that of the presence of a reducing substance in the urine.

We are examining the urine of, let us say, a thin, rather poorly developed girl of 6 years, and we find a positive sugar reaction. Is she diabetic? From our undergraduate days probably we have remembered and been influenced by the statements—"sugar is rarely found in the urine in children," and "diabetes in a young child is almost always rapidly fatal." For the moment, however, let us wash the slate clean and ask ourselves with an open mind—Is it uncommon when testing the urine of a child for sugar to get a positive reaction? The ordinary clinical tests for sugar in this country I take to be Fehling's solution and Benedict's solution. Both in the method of their use and in the interpretation of results there are many possible fallacies. Fehling's solution I have used according to the second method mentioned by Cammidge; Benedict's solution as described by Benedict.

Having for some time been much impressed by the reactions obtained in many cases, I recently took 100 unpicked cases to determine impartially the results of examination. The urine of 50 consecutive out-patients and of 50 in-patients of a hospital were examined, the ages of the patients ranging between 2 years and 11½ years. Of these 100 urines, 19 gave a positive reaction, in all cases very slight with Fehling's solution, and in most, but not all instances, confirmed with Benedict's. In some of the positive cases (9) I proceeded further to a fermentation test with yeast and got positive reactions in 6. In others (6) I sent the specimen to the laboratory, and got reports in 2 cases that the reducing substance was not glucose and in 4 either that it was glucose or was probably glucose.

Thus in 19 per cent. a positive reaction was obtained with Fehling's solution, and in 10 out of 15 of these specimens, on further examination, evidence was obtained of the presence of sugar. In this particular series of 100 cases, then, evidence of sugar in the urine was certainly present in 10.

These results would show that it is not uncommon to find clinical evidence of the presence in small amount of a reducing substance in the urine of ailing children, and that in many of these cases the reducing substance is some form of sugar. In all of these particular 100 cases the amount present was small and consequently the test reactions slight. How are we to account for the textbook statement that "sugar is rarely found in the urine in children"? There are three possible explanations, and I think the full explanation includes all. They are:

1. Lack of systematic examination of the urine for sugar;
2. Variations in sugar content of the urine in different districts; and,
3. Estimation of test results as negligible or "physiological."

As regards testing for sugar, this is obviously desirable in all cases. The test with Fehling's solution, as also confirmation with Benedict's, is readily carried out, though attended with various fallacies so far as a positive diagnosis of glycosuria is concerned. The tests should not be hurried, and if found positive even in slight degree, definition of the reducing agent present as a sugar or not a sugar can be conveniently made by reaction with yeast in a urecmeter tube. In the series of 100 cases just quoted, sugar was found to be the reducing agent present in two-thirds of the cases showing a positive reaction.

Is it likely that the sugar content of the urine varies in different parts of the country? Sugar, we know, is normally present in the blood and in the urine in amount conditioned by complex processes of metabolism. The liver, the pancreas and the thyroid—to mention only a few of the important organs—are closely associated with its absorption, utilization and excretion. The nervous system is intimately affected.

Varying conditions of climate, diet—of hygiene generally—often affect in a degree so marked as to be obvious the grosser results of differing function of these organs and systems—for example, goitre, asthma. We cannot deny the possibility of a difference according to locality in the degree of frequency of excretion in the urine of a reducing substance in detectable clinical amounts.

This leads to the third consideration: Should such minor test results as those I am discussing be considered negligible and physiological or not? I think they should always be noted, however slight and however fleeting they be, and an explanation sought. It is possible that most, if not all, children from time to time may give detectable sugar reaction on examination of the urine, but even so this forms no foundation for an argument that the detection of such a reaction is of negligible significance.

If once found, examination of numerous specimens should be made—of the twenty-four hours' urine and also of morning and evening specimens. In a large proportion of cases the presence of a positive test corresponds with indiscretion in diet or digestive disturbance, and disappears on correction of such. In other children with indigestion and constipation the reaction is completely negative. This point is in itself important, as possibly affording evidence of individual idiosyncrasy in carbohydrate metabolism.

Another important line of consideration is demonstrated by the findings in the following case.

A girl, aged 6 years, has been under observation in hospital for several months suffering from what I suspected might be progeria. The urine was healthy. She developed a large abscess in the face with considerable sloughing, and the urine showed a distinct positive sugar reaction. The abscess is now healed and the urine free from any reducing agent.

Here was a well-marked case of "sapraemic glycosuria." The precise nature of the reducing substance or substances in the urine during the period of suppuration was not determined, but the fermentation test with yeast was positive and the urine after the abscess healed was free from sugar. I am not now concerned with the nature of "sapraemic glycosuria," but with evidence that slight positive urine reactions should lead to search for a septic focus.

The precise nature of the sugar present in a specimen of urine cannot be determined without expert laboratory assistance; and the examination of blood sugar is, in my experience, valueless except in the hands of a skilled worker in constant practice. The fermentation test with yeast is, however, simple, and in the presence of a positive fermentation test we are faced with the possibility that the reducing agent may be dextrose (glucose or grape sugar), or laevulose (fructose or fruit sugar), or both. (I am not here dealing with nursing infants suffering from gastro-enteritis, in whose urine lactose may be present.)

It has been proved that the presence of laevulose in the urine may be regarded as a sign of liver inadequacy. Laevulose often appears in the urine along with dextrose in marked clinical cases of diabetes. It may, however, appear alone and be derived from cane sugar, honey, vegetables, fruits, etc., in the diet. When it appears it is, as stated above, to be regarded as a sign of liver inadequacy. If, with this in mind, we now turn to the clinical aspect of cases in which we find traces of a sugar present in the urine, we find that in many there is definite evidence of attacks of acidosis; in many there is a history of recurrent attacks of "biliousness"; and in most there is what one may term a full fatty diet. In fact, clinical evidence goes to show that in most there is evidence of strain on liver function, and it seems reasonable to conclude that the small amount of sugar in the urine is probably laevulose. This is further borne out by the satisfactory result of treatment by reduction of fat intake and, if necessary, restriction in amount of other elements in the diet.

But in a considerable proportion of the cases in which only a small amount of sugar is present in the urine, and in the great majority of cases in which the sugar is present in large amount, the sugar is dextrose—that is, the patient has glycosuria. What is the significance of this fact? It is outside the scope of this paper to consider cases either of intermittent or of persistent glycosuria in which large quantities of sugar can be demonstrated in the urine. In all such cases we obtain expert laboratory assistance, determine the level of the blood sugar and the nature of its reaction to a dose of sugar, and also the leak-point for sugar. But whatever methods of research we employ, and however favourable the results we obtain, our treatment must be that of diabetes mellitus.

It is with cases which show minor results on urinary examination that I wish to deal. In the majority of them there is no marked polyuria, and there may be no excessive thirst or wasting.

The presence of glucose in the urine is, we know, the chief sign of the existence of diabetes mellitus, but we also know that a small detectable amount of glucose in the urine may exist in the presence of sound health. Glycosuria is a term the interpretation of which in any individual case lies somewhere in a scale extending from sound health at the one extremity to diabetes mellitus at the other.

Cammidge, speaking of transitory, intermittent, and persistent glycosuria and diabetes, says: "It is important that it should be clearly recognized that each is but a phase of the same metabolic error, and that no hard-and-fast line can be drawn between them." He further speaks of a "pre-glycosuric stage." The obvious truth would seem to be: watch for the earliest beginning of abnormality and attempt to check it, as otherwise it may develop into uncontrollable disease.

The markedly outstanding lines along which to attempt to check development are dietetic—a well-balanced diet with the avoidance of constipation and intestinal putrefaction—and aseptic, the removal of all discoverable foci of infection.

My subject deals with small things and is mainly concerned with the beginnings of disease. For fuller development it requires blasts of clinical ozone to play around the figurative laboratory frog.

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BLOOD PRESSURE OBSERVATIONS IN FUNCTIONAL BRUITS IN CHILDREN AND YOUNG ADULTS.*

BY

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DURING convalescence from various mild infections children often go through a period in which they exhibit a sustained rise in blood pressure, the development of a systolic apical bruit presenting the usual functional signs, and accompanied by some cardiac dilatation. This phase of raised blood pressure is sometimes present during convalescence even from acute rheumatism, and its possibility must always be borne in mind when judging of the nature of a systolic cardiac bruit in children after pyrexia.

The child is far more unstable in its circulatory equilibrium than an adult, and the heart muscle just recovering from the damage of pyrexia is in no case able to sustain the increased work that a slight hyperpiesis involves. A rise of 10 or 20 mm. Hg, which is often to be observed, makes a far deeper impression than in an adult and can be the cause of the cardiac condition. My contention is proved by the fact that as soon as the blood pressure falls the cardiac sounds become normal, in the absence of an organic endocarditis.

The normal blood pressure in childhood has been very little studied in this country. I find a record of 3,000 repeated observations by Judson and Nicholson [1] in America. The standard of systolic pressure they lay down is as follows:

From 3 to 6 years	...	...	90-92 mm. Hg
,, 7 to 9 ,,	...	...	... up to 94 ,,
,, 10 to 11 ,,	...	...	... ,, 99 ,,
,, 12 to 13 ,,	...	...	... ,, 103 ,,
,, 14 to 15 ,,	...	...	... ,, 106 ,,

I have found that children are very susceptible to the action of the nitrites, and I have employed them in the following combination for reducing blood pressure in my cases: Sodium nitrite, liquor trinitrini, and spt. aetheris nitrosi in suitable dosage. In adults these are of no use. Appended are some notes of typical cases.

W. E., female, aged 9, had a mild faucial attack of diphtheria in February, 1916. Increasing tachycardia was observed as convalescence advanced, and she was kept in bed; ten days later, in spite of cardiac tonics, the heart had dilated beyond the nipple line, and a systolic bruit, not conducted, and heard in all postures,

* Being abstracts from a paper read before the Bradford Medico-Chirurgical Society, February, 1921.

had developed. Blood pressure 110. There was no albumin in the urine. Nitrites were given. Seven days later blood pressure was 95; the bruit and dilatation had gone. Six days later blood pressure was 96, and there was no bruit. The improvement in the heart did not occur until the blood pressure was lowered.

W. B., male, aged 5, had scarlet fever in June, 1919. There was cardiac dilatation on the eleventh day, with suspicion of an apical systolic bruit. On the twelfth day blood pressure was 100, and on the thirteenth 105. Nitrites were given; on the fifteenth day blood pressure 75, sounds clear, apex beat in the nipple line. On the twenty-fifth day blood pressure was 90, sounds clear; there was no albumin in the urine throughout. He was a highly strung child of a very neurotic mother.

S. D., male, aged 12, had fibrositis with pyrexia in February, 1916. He was the only child of neurotic parents. He had a sudden attack of severe pain in the back, with tenderness to the left of the spine in the lower dorsal region. His temperature was 100°, but was quickly controlled by salicylates. After seven days the heart was rapid and dilated considerably; the sounds were not clear, but he had no bruit. Seven days later there was no improvement, though he was kept in bed; a systolic apical bruit had developed; blood pressure 140. He was given the nitrite mixture, and after three days blood pressure was 120; bruit doubtful. For the next two days nitrites were not taken because of indigestion, and the boy was allowed up without my orders. I found the blood pressure again at 140, with dilatation and bruit more marked. After another three days' treatment the blood pressure was 115, with bruit much fainter. Ultimately he became quite well.

H. B., male, aged 7, had acute chorea in December, 1920. On the 26th the movements were very violent. Temperature 101°; blood pressure 103; there was a systolic bruit at the apex. The bruit and increased blood pressure persisted after the acute phase had passed. On February 1st he was able to walk, and I thought it safe to give nitrites. Blood pressure on February 1st was 105. The bruit was heard both standing and sitting, but was not transmitted to the back; it was intensified on lying down. On February 7th, after nitrites had been given for one week, blood pressure was 95; no bruit was heard in any position.

My conclusions, as a result of this experience, are as follows:

1. To take regular blood pressure observations in all cases of "impure" heart sounds after fever.
2. A rise in blood pressure, usually after, but sometimes during, the acute stage of an infection in children shows that a want of control of the arterial system is developing, and explains a functional bruit when it occurs.
3. If the heart condition in children is relieved by lowering the blood pressure, rest in bed can be dispensed with after sufficient rest has been taken to ensure that the heart muscle has repaired the temporary damage of the pyrexia.

To explain these cases is difficult. Three factors at least must be considered:

1. The patient's temperament. It is particularly the "nervy" children who suffer this disability. The neurotic element is a large one in modern etiology. Cannon[2] has proved experimentally that the suprarenal secretion is much increased in emotional stresses, such as fear and pain.
2. The action of the toxin upon—
(*a*) The arteries. Toxins are universally credited with a depressor action on the musculature of heart and arteries. I do not wish to question this. My cases are a fairly common exception to the rule that the blood pressure is lowered during an infection. It must not be forgotten, as pointed out by Allbutt, that the same causes may operate to produce hyperpiesis in childhood as in adult life. These may be more active after a pyrexia. But this does not disprove my main contention, that the heart condition improves *pari passu* with lowering the blood pressure.
(*b*) The endocrine system. It is not unreasonable to assert that its delicate balance can be temporarily at fault during the toxaemia of childhood's illnesses, and that transient degenerative changes are present in these glands during a fever. It is quite possible, too, that the toxin may exhaust the sympathetic nervous system which controls them. The frequent presence of a compensated acidosis in these cases will, I hazard, be explained in the same way.

The condition thus described is on all-fours with the common "D.A.H." of the soldier. The very name is a glaring example of hasty and slipshod thinking, focusing the attention on the heart instead of on the circulation as a whole. Derangement of blood-pressure control is the correct diagnosis; the heart is only involved in so far as it is overworked to maintain an efficient circulation. Earlier symptoms, suggesting hyperthyroidism, were common in these cases. In 1921 this phase has passed, and a raised blood pressure is often the only genuine sign of derangement that can be found, suggesting hyperadrenalism. The soldier was taken from sedentary life and drilled to dropping point for some months; he lived for some years on poisonous "dixie" tea and eternal stews, smoked endless cigarettes, suffered fear, lack of sleep, and usually several distinct pyrexias of known or unknown origin. It is no wonder that blood-pressure control broke down, and that when the vicious circle has been confirmed it takes years to undo by reorganizing the endocrine system and building up the sympathetic nervous system which has become exhausted.

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A CLINICAL TEST FOR THE PRESENCE OF CELLULAR ELEMENTS IN THE URINE.

BY
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THE object of publishing this note is to put into the hands of the medical practitioner or the nurse a simple means of ascertaining the presence or absence of pus, blood, or bacteria in the urine. The principle of the test is not new, but I have not seen it in standard works on clinical pathology, and from extended observations it seems to me that it should have a useful place in clinical work. This method will frequently reveal pathological conditions in the urinary system where none had been suspected, since it has a wider scope and a much greater delicacy than the clinical methods ordinarily in use in general practice, where a centrifuge and microscope are often not available. If the presence of cellular elements in the urine is shown by this test a further specimen must then be submitted to microscopical examination to ascertain their nature. If the test is negative it can, with a few rare exceptions, be stated that in this respect no further examination is required.

Cellular elements are not normally present in a freshly passed urine, if we except an occasional epithelial cell. If cells are present they may be either bacteria, or cells derived from the body. These latter may be casts from the kidney tubules, or epithelium derived from the urinary tract; or they may be either red or white blood cells, the latter almost invariably polymorphonuclear leucocytes.

Nature of the Reaction.—The test is made to ascertain the presence of peroxide splitting enzymes in the urine. These enzymes have the power of setting free oxygen from hydrogen peroxide, and the reaction in a fluid medium gives rise to the ebullition of gas bubbles. In addition to enzymes certain other bodies have the power of setting free the oxygen, but for our present purpose haemoglobin is the only one that need concern us. If hydrogen peroxide is added to normal sterile urine no effervescence occurs even after a considerable time has elapsed. It follows that if the addition of the peroxide leads to effervescence we may take it that some abnormal element is present in the urine.

Source of the Enzymes.—These enzymes are present in pus cells or leucocytes in large amount, and these, therefore, give a very free reaction. The enzymes are said not to be present in lymphocytes, but in any case these cells are rarely present, alone at any rate, in urine. Epithelial squames give little reaction, unless heavily infected with bacteria, but the deeper epithelial cells react more freely. Tube casts may react vigorously. Red blood cells give the reaction on account of their haemoglobin. Of the albuminous fluids fresh blood serum gives an active reaction, probably on account of some blood cells remaining in suspension in it, since other albuminous fluids such as hydrocele and ascitic are inert. The slight reaction usually obtained from an albumin-containing urine is probably due to the presence of casts and a few blood and pus cells such as are usually present in such conditions.

Bacteria.—In an investigation of the various bacteria isolated in the course of routine laboratory work for a considerable period I found that practically all of the bacteria, with the exception of the streptococcal group (which includes the pneumococcus), gave active ebullition with hydrogen peroxide when the cultures were treated directly with it. At the same time it was noted, when bacteria were grown on sugar-containing media (which they fermented with the production of acid), that they were liable to give a negative reaction. This point has to be considered in dealing with very acid urines, since the peroxide-splitting enzymes only act well in neutral or alkaline media.

Minimal Amounts Giving the Test.—These were ascertained experimentally, using normal urine as a basis and adding the foreign substances in appropriate quantities. The

sensitivity of the peroxide test in the case of blood and pus was compared with the guaiacum reaction. It was found that the peroxide test was positive with about one-twentieth the amount of pus that would just give the guaiacum reaction (using ordinary tincture of guaiacum). The guaiacum test was positive only where there was sufficient pus in the urine to cause a definite turbidity, but the peroxide test gave a positive reaction where no trace of foreign matter could be seen.

With blood the peroxide test was positive with about 300,000 red corpuscles per cubic centimetre of urine, the guaiacum and ozonic ether failing at anything below 1,250,000. To the naked eye the former amount could not be seen in the urine. In the case of bacteria the presence of the staphylococcus was demonstrable in as small numbers as 200 million per cubic centimetre, which number was not obvious to the naked eye except by very careful comparison with a control.

Similar results were obtained with *B. coli* and *B. paratyphosus* B.

Technique of the Test.—If the urine is strongly acid or alkaline to litmus it should first be neutralized by the addition of a few drops of dilute alkali or acid. The peroxide should be fairly fresh, not less than 20 volumes in strength—40 volumes is better—and not too acid in reaction. I have obtained by far the best results with the neutral 100 per cent. fluid issued by Merck's under the name of "perhydrol," as with this concentrated solution only a few drops are needed for the test.

Take about a third of a test tube of urine and add about a quarter of the amount of the 20 volumes peroxide solution to it. Stand the tube in a rack, not in direct sunlight, or spontaneous evolution will take place. In a strongly positive reaction bubbles start to rise immediately and form a permanent layer of foam at the top of the fluid. If the reaction is only faintly positive bubbles will gradually rise and form a thin layer on the top; this may take from fifteen to twenty minutes or longer if the urine is acid. A few bubbles lying on the meniscus are made more evident by gently rocking the tube to throw them down into the fluid.

All degrees of effervescence may occur between the two described. In a normal urine one or two bubbles may rise immediately after the addition of the peroxide, especially if the urine is warm, but there is no steady evolution of gas or formation of a layer of foam.

Sources of Fallacy in the Test.—(1) Accidental contamination of the specimen with bacteria is a frequent source of error since the ordinary specimen glass is as a rule grossly contaminated with bacteria. Moreover, in non-catheter specimens, if several hours old, there is certain to be a good deal of bacterial growth which would give a positive reaction. It follows that the specimen must be collected in a quite clean vessel, and unless a carefully taken catheter specimen is available the test should be carried out shortly after the urine is passed. In the case of females a catheter specimen though not imperative is advisable on account of the cellular and bacterial débris that may be present. (2) The ordinary peroxide solutions are likely to be definitely acid, and this may lead to error in several ways. If an unnecessarily large amount of the reagent is added the action of the enzymes will be inhibited. More than this, if carbonates are present, the acid will act on them and lead to effervescence and so to a faulty diagnosis.

Summary.

Peroxide splitting enzymes are derived from most cellular elements. Hydrogen peroxide is also decomposed by haemoglobin from red blood cells. Cellular elements are not present in normal urine; in pathological urines those most often present are red blood cells, pus cells, and bacteria. In nearly all cases the presence of these bodies or their derivatives can be shown by this test, even when present in amount very much smaller than can be detected by the clinical tests commonly in use. The test, however, does not differentiate between one form of cellular element and another; it shows with a very small percentage of error whether abnormal bodies are or are not present, and whether or not further investigation is needed.

The reaction is negative with the various crystalline deposits (with the already noted exception of carbonates).

NOVEMBER 23RD was set apart by the municipal authorities of Berlin for the extermination of rats. The owners of property in the city were ordered under a penalty to distribute on that day in appropriate places upon their property effective rat poison to the value of fifty marks.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

FRACTURE OF THE END PHALANX OF A FINGER, WITH RUPTURE OF THE COMMON EXTENSOR TENDON.

(With Special Plate.)

THERE is a device, known to many, for opening a clenched fist. It consists in forcibly approximating the tip of a finger to the first interphalangeal joint (by flexion). I have had a case recently of this kind. The *fons et origo malorum* was a coin in the closed hand of one person which another individual was desirous of releasing.

The aggressor in the struggle began by forcing the tip of the little finger towards the first interphalangeal joint (flexion). The result of this procedure was a swelling in the distal interphalangeal joint, which did not subside in a reasonable time. I accordingly made a radiogram of the joint. This showed that a portion of the bony substance of the dorsal proximal part of the distal phalanx was detached, and the result was incapacity to extend fully the end phalanx.

Treatment, which consisted of hyperextension for a few weeks, was quite successful, power to extend the phalanx fully being completely restored. The illustrations are radiograms taken before and after treatment. (See Special Plate.)

I have found an injury due to similar kinds of violence described under the name of "drop finger" or "mallet finger," but I think the interest in this case consists in the detachment of bone, which is shown in the radiogram, and which I am unable to find previously described.

I have to thank Mr. Hedley Marsh for helpful criticism.

Macclesfield. JOHN N. LAIRD, M.D.

TORN SPLENIC ARTERY—SPLENECTOMY.

T. G. was admitted into the North Lonsdale Hospital in a state of collapse, as a result of an accident, on April 26th, 1921. He had fallen into the hold of a ship, first 30 feet on to a plank, then bouncing off the plank and falling another 10 feet.

On examination there was obviously acute abdominal trouble, with dullness in the left flank. I at once opened the abdomen and found blood in the peritoneal cavity, the splenic ligaments were torn away with the splenic artery, the artery was torn at the exact junction with the spleen as if shaved off, but the spleen itself was practically undamaged.

I removed the spleen, ligatured the splenic artery, closed the abdominal wound, and the patient left the hospital on June 20th.

The accident was remarkable inasmuch as there was no other bodily injury at all. I attribute the peculiar separation of the artery to the sudden break in the fall when at 30 feet he bounced off the plank and thus snapped the artery.

On November 23th I had a blood film examined at the Yorkshire Pathological Society, the report of which was that the red corpuscles showed no abnormality, and were almost uniform in size and shape, and that the leucocytes seemed to bear the normal proportion to the red corpuscles. On the same date the patient seemed to be in very good health, normal weight 9 st. 4 lb., height 5 ft. 4 in., and apparently not missing his spleen in any way.

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AN OPERATION FOR THE RELIEF OF ASCITES, FOLLOWING CIRRHOSIS OF LIVER.

A MALE Hindu, aged 35, about twenty-five years ago had an attack of malaria lasting nearly one year. About ten months ago he suffered again from malaria, and since that time he noticed gradual swelling of the hypogastric region. This swelling increased, gradually extending to the whole abdomen. He had severe attacks of epistaxis; soon after his legs also commenced to swell. The patient is an inhabitant of a village about sixty miles from Kurduwadi, Deccan, India, the condition of which is insanitary.

When he consulted me he complained of pain after food, he had dyspnoea while walking, and suffered from slight insomnia. On examination the chest was emphysematous

and the heart pushed upwards, due to fluid in the abdomen. The pulse was feeble. There was oedema of the face and lower extremities, and the abdomen was distended evenly; on palpation fluid and thrill were present. The abdomen was 40 inches in circumference, the liver was contracted, and the spleen enlarged. He was passing little urine, and that was high coloured, but with no albumin or sugar.

Injections of quinine bihydrochloride, 5 grains, were administered every third day; six injections were given in all, but there was no improvement. The abdomen was tapped three times, about every fifteen days, and 100 oz. of fluid were removed each time.

Operation.

The patient was tapped one evening previous to operation, and 100 oz. of fluid removed, but, as the pulse was weak and feeble, operation was not performed on the same day as the tapping. Under chloroform a semicircular skin incision, about 3½ to 4 inches long, was made midway between the umbilicus and left iliac crest, with the base downwards. A semicircular flap was turned down, the external oblique was incised for 1½ inches parallel to its fibres at the base of the flap, and the internal oblique was incised for 1½ inches along its fibres. The peritoneum was exposed and a puncture about the size of a quill carefully made, when an amount of ascitic fluid came away. A purse-string suture of catgut was put round the puncture through the internal oblique muscle, the head of the "stud," described below, was introduced into the peritoneal cavity, with the base of the stud resting on the internal oblique muscle. The catgut suture was tightened round the neck of the "stud." All haemorrhage was stopped by artery forceps or ligature. The external oblique came together by natural apposition, and was sutured with catgut. The semicircular skin incision was closed by silver suture and the wound dressed with double cyanide gauze.

Plan and section of "stud" made of silver. The principle of this stud is to drain the ascitic fluid accumulating in the peritoneal cavity through the opening into the surrounding tissues.

On the second day after operation the patient got up and walked, against advice; in consequence there was a serous discharge of fluid from the wound. A pressure bandage was applied for a few days until the skin incision had well healed. There was no complication of fever. On the third day the skin round the wound was slightly inflamed, due to application of tinct. iodi.

Within twenty-four hours of the operation the oedema of the body went down, and the abdomen was flaccid. The oedema of the legs diminished on the third day, and the facial oedema was greatly lessened. There was some oedema of eyelids and foot on the fifth day. The sutures were removed on the sixth day, and after twelve days the wound was healed. The patient left the hospital and returned to his own country about the sixteenth day, as he stated he was well, and did not complain any further of ascites. On the day he left there was still some fluid in the abdomen, but it did not cause discomfort.

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THE CLASSIFICATION OF SQUINT.

AN interesting communication on squint by Lieut.-Colonel Smith in a recent number of the BRITISH MEDICAL JOURNAL recalled to me the classification of cases of squint which I was in the habit of giving to the medical students who attended my classes.

My general definition of squint is as follows: "When the axes of vision do not intersect at the point of fixation then there is squint." I divided the affection into two groups—namely, (*a*) mechanical squints, (*b*) functional squints. In the first the axes of vision are prevented from intersecting by such conditions as paralysis or paresis of one or more muscles of one or both eyes. To this class also belong those cases in which the presence of an orbital tumour prevents movement and thus interferes with the intersection of the axes at the point of fixation.

Functional squints are those in which there is no mechanical obstruction to movement, but where the defect is due to a difficulty of fusion. The commonest form of this variety is concomitant convergent strabismus. Under this head are also to be classed those cases in which there is marked defective vision in one eye, so that the intuitive perception of the third dimension of space is impossible. In general the squinting eye, when the condition is due to disease in one, diverges — that is, assumes the usual anatomical position of rest.

The exact classification of heterophorias is perhaps a little doubtful, and may be considered from two points of view. On the one hand, they may be regarded as due to deficiency in the nerve energy supplied to one or more of the extrinsic muscles of one or both eyes. If that view be taken they must be looked upon as cases of muscular paresis. On the other hand, if they are regarded as due to defective fusion centre, then they may more properly be considered as belonging to the second group.

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Reports of Societies.

HYPERTHYROIDISM IN FUNCTIONAL MENORRHAGIA.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, held on January 5th, with the President, Professor HENRY BRIGGS, in the chair, Mr. ALECK W. BOURNE read a paper on hyperthyroidism in functional menorrhagia. There is, he said, a large class of women suffering from menorrhagia in whom no local signs of disease can be discovered in the pelvis. Clinical examination and curetting of the uterus both fail to reveal abnormality, and ordinary methods of treatment by drugs and organic extracts are useless in arresting the excessive haemorrhage. A series of cases of this type has been examined with a view to establishing hyperthyroidism as a cause, and defining a variety of functional menorrhagia as due to hyperthyroidism. Clinical examination of the patients was first made in order to detect those physical signs and symptoms usually associated with hyperthyroidism. The most prominent of these were loss of weight and nervous instability. Others less constantly present were increased pulse rate, slight tremors, and a tendency to sweat easily. Enlargement of the thyroid was occasionally present, but more often normal in appearance. Exophthalmos was only present in one case. The two pieces of evidence supporting the view of hyperthyroidism as the causal factor were, first, the increased basal metabolism, as determined in all cases by Dr. C. M. Wilson, and, secondly, the reaction of both the basal metabolic rate and the symptom of menorrhagia to the application of *x* rays to the thyroid gland.

Measurement of the basal metabolic rate (B.M.R.) differentiated the patients into two groups: (*a*) Those at or about the age of puberty (six cases only), who showed a normal or depressed B.M.R. in five out of the six, in spite of considerable thyroid enlargement in some of them; and (*b*) those patients who were sexually mature. All these cases (14 in all) showed a raised B.M.R. of about + 20 per cent., the lowest being + 14 per cent., and the highest + 46 per cent. Three were married, with menorrhagia dating from the last confinement. The uterus in these patients was distinctly smaller than normal. The suggestion was made that the normal hyperthyroidism of pregnancy had persisted with the production of a functional menorrhagia.

The second piece of evidence was the effect of *x*-ray application to the thyroid gland, carried out by Dr. G. Harrison Orton. The second group, sexually mature, reacted after a few doses of *x* rays to the extent that eight out of ten had the B.M.R. reduced to within normal limits (− 10 per cent. to + 10 per cent.), together with the return of normal menstruation, while the two patients whose B.M.R. persisted at a high figure showed no menstrual improvement. In cases where a relapse occurred the B.M.R. rose *pari passu* with the return of menorrhagia. The group at or about the age of puberty examined after *x* ray application were too few, but of the four three had shown no improvement.

Dr. HARRISON ORTON said that all the cases described by Dr. Bourne, with one or two exceptions, had been treated in exactly the same manner, the procedure being as follows: a dose of 1/2 B or 5 X was given once a week for three doses, the filter being 1 mm. of aluminium and four layers of wash leather. After this, doses of 4/5 B were given once in three weeks through a filter of 3½ mm. of aluminium and wash leather as before; rays should be hard, not less than 9-10 on the Bauer qualimeter. The average number of doses was about eight. It was important that no erythema of the skin be produced, as this was likely to lead to the formation of telangiectasis in the skin, which might become very unsightly. In one of Dr. Bourne's cases, and in another case of Graves's disease, he had seen a tendency to myxoedema produced after eight such exposures, so he thought it advisable to have the basal

metabolism tested again after six exposures; on the other hand, some cases had had considerably more than eight exposures without improvement, so that the amount required seemed to be very variable. He thought it should be remembered, too, that cases of Graves's disease, which had had no *x*-ray exposures at all, had been reported, in which myxoedema developed subsequently. He had no doubt that the estimation of the basal metabolism would eventually lead to a much more accurate dosage being determined.

Mr. BECKWITH WHITEHOUSE read a short communication on salpingotomy *versus* salpingectomy in the treatment of tubal gestation. He pointed out that in all cases of tubal mole the attachment of the mole to the tube is small, and that the rest of the mole can be easily detached from the wall. These considerations suggested the possibility of preserving the tube after removal of the mole from the tube *in situ*. In a series of ten cases he incised the tube, removed the mole, and controlled the bleeding by suture, and then removed the tube for examination in detail for evidence of inflammatory change. In all the tissues appeared normal. Since then he had removed the gestation and sutured the tube in five cases, with apparently satisfactory results. He thought probably removal of the tube in cases of rupture was the better procedure, but in cases of tubal mole and tubal abortion salpingotomy appeared to be worthy of a trial.

Mr. JOHN B. HUNTER made a short communication and showed microscope slides from a case of general vascular carcinoma. The patient was a woman of 35, who had had six weeks' history of rectal and vaginal pain before admission to University College Hospital under Dr. Blacker. There was no history of bleeding, but there had been rapid wasting. Examination revealed infiltration of the vaginal walls down to the urinary meatus, the cervix appeared nodular, bleeding slightly on examination, but there was no ulceration. The only treatment thought likely to influence the condition was radium, and although there was apparently considerable improvement under treatment the patient remained in an exhausted condition and died. On *post-mortem* examination there was found a deposit of growth on the chordae tendineae of the mitral valve. The pleura, lungs, spleen and liver contained deposits of growth. Douglas's pouch was closed by adhesions in which growth was present. Microscopically, all the organs examined showed the presence of growth, and in the broad ligaments was widespread growth; some of the vessels were blocked by growth, some had central cores of growth with circulating red cells surrounding them. Mr. Hunter thought the peculiar distribution of the growth throughout the vessels of the body justified the term of a general vascular carcinoma.

Mr. BECKWITH WHITEHOUSE showed a specimen of tubal lithopaedion, the patient being a woman of 45, who had had two children. Fifteen years before being seen by Mr. Whitehouse she had had what was described as a very bad miscarriage followed by an acute illness, which had kept her in bed practically for three months. There had been no subsequent pregnancy, and the periods became regular, although profuse. Attacks of severe cystitis occurred at intervals for several years, and the diagnosis for renal calculus had been made five years before Mr. Whitehouse was consulted. The specimen showed the appearances of a typical lithopaedion corresponding to a gestation of about three months; the cranial bones, vertebrae, scapula, pelvic girdle, and certain digits were all recognizable on the surface. The patient made a good recovery, but five months later died from double pyonephrosis.

TREATMENT OF PSYCHOSES.

IN the Section of Psychiatry of the Royal Society of Medicine, on January 10th, with Dr. R. PERCY SMITH in the chair, Dr. R. G. Rows gave an address on "Modern methods in the treatment of psychoses."

Dr. Rows said that there did not seem to be any basis for a scientific distinction between the psychoneuroses and the psychoses, although such a distinction might be useful from a clinical or descriptive standpoint. If it was intended to speak of an organic basis for psychoses, they must be considered from the earliest moment of their appearance and must not depend upon examinations which had been made a number of years after the trouble began, for in later stages there might be very definite changes in the central nervous system. From the point of view of recoverability, there was no distinction between the two things at all; both were recoverable if treatment was applied in the early stages, and were difficult if treatment was long delayed. All mental illnesses existed for a long time before they were obvious to those associating with the victim. By mental illness Dr. Rows meant a condition in which there was a disturbance of the ordinary mental activities, such as proceeding, thinking, feeling, judging, giving attention and assessing values. The patient himself was the first to recognize an abnormality. Sometimes there was definite disturbance during the night, but apparent normality in the daytime, until later the abnormality extended to relationships in the world.

Freud counselled that symptoms should be regarded merely as directing posts indicating lines of investigation, and this investigation would show the cause of the symptoms manifested. He himself found symptoms to be of extraordinarily little value in understanding a case. If the wildest deliriums were analysed some experience would be found in the earlier life of the patient to account for the form which the disorder assumed. Once the mental illness was established, with a dominant emotional tendency, every incident of the past which had been accompanied by a similar emotional state added its weight to the disturbing influence. His contention was that the emotion in all such cases was a normal reaction to the stimuli which caused the mental disturbance. The sequence of stimulus, association, inhibition, and reaction, although worked out possibly in an exaggerated form, was the product of the old mechanisms; no new mechanism was introduced into the evolution of the psychosis. The ordinary symptoms relied upon for the diagnosis of the various types of mental disorder were as a rule secondary developments. Mental illness was present before the delusion or the hallucination arose. As time went on, the repetition of the stimulus or the recollection of the stimulus brought about a habit of thought from which it was exceedingly difficult for the patient to escape. The most trifling cause was sufficient to set in motion the memory mechanism, and the patient thereupon fell into a state of terror or whatever the emotional manifestation might be.

Dr. Rows went on to say that it was impossible to understand mental illness by considering the psychic side alone. Every experience which crossed the threshold of consciousness had three results: an intellectual perception of the fact, an emotional reaction, and a physical reaction. The emotion of acute fear, for example, was associated with a disturbance of practically every organ of the body, quite as the normal result of the stimulus. Many of the symptoms of organic reactions in patients were simply physical changes connected with the expression of the emotions, and did not indicate any definite physical disease; they were natural consequences of the emotional state in which the patient found himself. Mental illness was not merely the result of a change in the nervous system; if the mental processes were to be understood the organism must be taken as a whole, or, at least, if attention was concentrated on the nervous system, its normal reactions must be very carefully worked out.

In the course of a brief discussion the CHAIRMAN expressed the opinion that Dr. Rows had been too sweeping in his suggestion that symptoms were recognized by the patient long before anybody else recognized them; in a good many cases the patient did not recognize the position at all. Dr. W. H. B. STODDART believed that Dr. Rows's method of approach was the correct one, although he thought it would be a long time before it came into general employment in the asylums. It was necessary to go back to a very early age to find the influences which prepared the soil for the subsequent breakdown.

Dr. H. CRICHTON MILLER said that the contention that in psychoses we constantly saw the normal reactions of the mind was rather discounted by the large number of mechanisms which were recognized as being normal in childhood but abnormal in adult life. It might be perfectly normal for the child to indulge in phantasy, but if this process continued or recurred in the adult a psychosis was apt to develop. To say that this regression to a puerile experience was due to a normal mechanism was only true in a limited sense; it was a regression, not a progressive reaction to experience, and therefore was abnormal.

Dr. Rows, in reply, disagreed with Dr. Crichton Miller, and claimed that the various emotions, such as remorse and fear, were normal reactions of the adult as well as of the child. They were part of a defensive mechanism which certainly appeared first in childhood, but remained with the individual throughout his life.

MATERNAL MORTALITY.

THE fourth meeting for the session of the Ulster Medical Society was held on January 12th, the chair being occupied by the President, Dr. ROBERT HALL.

Professor C. G. LOWRY read a paper entitled "Maternal mortality: a retrospect." Child-bearing, he said, was no doubt a physiological process, but it was not for the woman's own benefit, as other physiological processes were, such as eating, breathing, urination, etc.; it was for the benefit of the nation. It was incumbent, therefore, on the nation to see that the process was as safe as science could render it. Mortality had fallen in surgical work, and sepsis had practically been banished; it had also decreased in such affections which threatened the human race as tuberculosis, but the mortality from childbirth was still too high and had not fallen in at all the same proportion. In Ireland in 1920, 550 deaths had occurred attributable to child bearing, and of these 46 per cent. were due to sepsis. Deaths per 1,000 births in England and Wales had even increased; they were 4.81 in 1908 and 7.6 in 1918; this latter figure was probably due to influenza. In Ireland the mortality rate per 1,000 had varied from 5.62 in 1914 to 6.26 in 1920. No corresponding diminution followed the introduction of antiseptics or aseptics; it was 5.5 per 1,000 in 1850, 4.6 in 1860, 4.9 in 1870, 4.0 in 1880, 5.7 in 1892, 4.4 in 1902, and 4.9 in 1912. No diminution was found in the United States of America, nor in fifteen other countries. In Scotland it had risen from 5.0 in 1870 to 6.1 in 1915. England had a present average of 1 maternal death for every 250 births, Ireland 1 for every 191, Wales 1 for every 179, and Scotland 1 for every 175. Mortality from puerperal sepsis in England was 2.56 per 1,000 births in 1881–90 and 1.39 in 1911–14; in Wales, 3.11 and 1.67 in same periods; in Scotland, 2.42 and 1.44; in Ireland, 2.83 and 2.01. The death rate from accidents and diseases had altered very little.

Professor Lowry then gave a graphic account of the Vienna school in its earlier days and of the struggles of Semmelweis. He pointed out that instead of obstetrics being indebted to surgery for its rules and borrowing guidance from it in a belated fashion, if Semmelweis had received the support of an educated and unenvious profession obstetrics would have led the way to aseptics fifty years before surgery had learnt its lesson. He then laid down the lines of advance in the future, the use of the ante-natal clinic, which was now in full work at their maternity hospital, the necessity of endeavouring to prevent and anticipate trouble, such as eclampsia (a condition more easily prevented than cured), the advisability of having cottage maternity hospitals in every district, and other recommendations. Anaesthetics and antiseptics had proved very doubtful benefactors in midwifery; they encouraged interference when interference was harmful. The speaker paid a grateful tribute to the work of Mr. Victor Bonney, and for his inspiring help in this subject.

Dr. W. R. MACKENZIE read a note on "Rupture of Caesarean section scar in subsequent pregnancy," and showed the specimen of the uterus which he had successfully removed. A woman, aged 28, healthy, was delivered by Caesarean section in 1918 for contracted pelvis by Mr. John Campbell, and again in 1920; in her third pregnancy labour began on September 20th, 1921, and after eighteen hours she was operated on by Dr. Mackenzie. She had no sign of collapse or of internal haemorrhage; he found the dead foetus and placenta free in the abdominal cavity, and a large rupture, extending the whole length of the previous scars, in the anterior surface of the uterus; the uterus was removed by subtotal hysterectomy, and the patient made an uninterrupted recovery. Dr. Hall of Monaghan, who had assisted in the previous operations, assisted also in this one.

Drs. STOREY, TRIMBLE, RENTOUL, GAUSSEN, SHAW, THOMAS HOUSTON, offered criticisms and remarks on both papers, and Professor LOWRY and Dr. MACKENZIE replied.

ACUTE INTESTINAL OBSTRUCTION.

A MEETING of the Manchester Pathological Society was held on December 8th, 1921, with the President, Mr. J. HOWSON RAY, in the chair, when Mr. D. P. D. WILKIE of Edinburgh read a paper on acute intestinal obstruction. Mr. Wilkie first insisted on the distinction which must be drawn between simple obstruction of the lumen of the gut, and obstruction *plus* interference with the blood supply of a segment. He passed on to consider the question from the standpoint of the factors causing death in the three main types of intestinal obstruction—by (1) simple obstruction of the lumen in its continuity, (2) closed-loop obstruction, and (3) strangulation. In the first variety a clear distinction could be drawn between high obstruction with copious vomiting and an early fatal issue, and low obstruction with slowly increasing toxaemia. From experimental data it appeared that the absorption of toxins was a relatively slow process through unbroken intestinal mucosa, and that emptying of the bowel was necessary only in late cases. The toxin probably belonged to the proteose group, and retention of it in the upper jejunum was associated with most danger. In the closed-loop obstruction, most typically seen in acute obstruction of the appendix, toxaemic symptoms depended on the presence of faecal matter within the closed loop. Putrefactive changes in the retained faecal matter gave rise to profound toxaemia and to gangrene of the wall of the loop. When no faecal matter was present in the loop toxaemia was absent, and a mucocele or at most a slowly forming empyema of the loop resulted. In cases of strangulation shock was the primary and dominant factor, and death might result before toxaemia was demonstrable. The essentials of treatment consisted in prompt operative interference, minimizing shock by the free use of morphine, subcutaneous saline, and gas and oxygen anaesthesia. Rapid and conservative operating was necessary, and post-operative administration of saline subcutaneously, gastric lavage, and pituitrin and enemata were further measures which should be taken to ensure an early evacuation of the toxic content.

The lecture was illustrated by means of lantern slides showing charts, photographs of experiments, and water-colour drawings of specimens.

PRE-ANAESTHETIC INTOXICATION.

A MEETING of the Scottish Society of Anaesthetists was held at Glasgow on November 26th, 1921, in the Hall of the Faculty of Physicians and Surgeons, and Dr. J. JOHNSTON, of Aberdeen, the new president, read his inaugural address upon the subject of "Some pre-anaesthetic intoxications." The types of intoxication discussed included the various drug habits, alcoholism being considered at some length as being fairly typical and most likely to give trouble to the anaesthetist. The pathology was briefly outlined, and the possibilities of preliminary curative treatment were reviewed, particularly as to the reduction of acidosis; the value of the judicious use of pre-operative hypnotics was emphasized. The intractability of the alcoholic patient under general anaesthesia was regarded as being due mainly to defective oxygenation; the chief danger was paralysis of the medullary centres and heart failure. The choice of anaesthetic was discussed, methods combining the administration of oxygen with the various mixtures of ether and chloroform being preferred in most cases, the chloroform to be used as sparingly as possible. The danger of post-anaesthetic acidosis was noted and its prevention discussed. Variations from this type in the case of other drug habits, such as morphinism and cocainism, were mentioned, and the question was raised as to the possibility of anaesthetic troubles due to the habitual use of such drugs as aspirin. The late effects of shell-gas poisoning as affecting anaesthesia were also shortly reviewed.

Dr. JOHN ANDERSON, Pathologist, Victoria Infirmary, Glasgow, submitted to the society the clinical facts of the cases of death during the administration of anaesthetics which had taken place in Glasgow during the past thirteen years. Statistics of 417 cases were presented, showing the sex, age, and condition of the patient, the anaesthetic used and time of administration, the surgical operation or disease for which the anaesthetic was administered, and the opinion as to the nature of death. The paper was freely discussed by the members present.

CELLULOID SPLINTS.

AT a meeting of the London Association of the Medical Women's Federation on January 10th, at the Elizabeth Garrett Anderson Hospital, with Mrs. FLEMING in the chair, Dr. CHARLOTTE BROWN gave a description of the ambulatory treatment of tuberculous disease of bones and joints, and showed splints used by her at the High Beech Hospital, which has been established in the last two years by the Essex County Council for the treatment of cases of non-pulmonary tuberculosis. The object of her demonstration was to emphasize the many advantages of celluloid splints made on the Alton pattern for cases of bone disease where

activity had been arrested and where a limited amount of protected movement was beneficial. The celluloid splints were made from a plaster cast taken from the patient, so that they could be most accurately fitted. They were extremely light, very durable, and could be washed as easily as a dinner plate. They were not affected by the heat of the body, and the danger of the inflammability of celluloid had been overcome by mixing calcium chloride with the celluloid solution. Dr. Brown described the making of a splint in minute detail, and explained how easy this was. The time needed for the drying of the thirty or more layers of celluloid which had to be painted on was probably the reason why such splints were expensive to buy; when made at home the painting on of the celluloid took very little time. She added that light splints, such as she showed, could probably be employed with advantage for other than tuberculous conditions. They could be used for cases of infantile paralysis with great benefit, since the correction of malposition with the allowing of a certain amount of muscular action was very advantageous.

THE annual meeting of the Harveian Society was held at 11, Chandos Street on January 12th. The formal business having been completed, the retiring President, Dr. G. de B. TURTLE, delivered his address entitled, "Some points on spasm in the alimentary tract." The thanks of the Society to the retiring President were proposed by Dr. ROUTH and seconded by Professor LANGMEAD, and carried by acclamation. The Society then expressed its hearty approval of the work of the other officers, and Dr. Frankish replied on their behalf. The new President, Sir William Willcox, K.C.I.E., was then invested and installed in the chair.

Reviews.

SEX RELATIONS AND BIRTH CONTROL.

THE speech on sexual relationships which Lord DAWSON OF PENN was invited to deliver at the Church Congress at Birmingham last October has been published in a pamphlet entitled *Love—Marriage—Birth Control*.[1] The subject matter, as he says in a foreword he has written for the pamphlet, "aroused widespread interest and some controversy." The reports published at the time, he adds, being condensed, indequately and in some instances incorrctly set forth the views he championed. It is satisfactory therefore to have an authentic version, and by reading it in its entirety misapprehension may be avoided. We propose here to give an outline of what we understand Lord Dawson's argument to be.

The first part of the speech was devoted to the study of the significance and purport of sex love in a well ordered and Christian community, and provision for its healthy outlet. Sex love, says Lord Dawson, should be the physical expression of a lasting affection, blended so as to form a union of body, mind and spirit. Further, it should be associated with the love of and desire for children. To save time the speaker dealt with the problem of sex love and not with that of child love; and with sex love in relation to marriage and not with illicit intercourse; though he notes that if in any community marriage is difficult or late of attainment an increase of irregular unions inevitably occurs.

Lord Dawson considers that people need more knowledge of the scientific bearings of sex relations, and more clearly defined guidance in their rightful practice. He finds that people talk about instructing the young in these matters when, unfortunately, they are neither clear nor agreed amongst themselves. The Anglican Church, in the Marriage Service, appears, he says, to imply that marriage exists for the purpose of giving people who cannot be continent the best way out; while the Lambeth Conference seemed to condemn sex love as such, and to sanction it only as a means to an end—procreation. To Lord Dawson, on the other hand, the love indicated by the Lambeth Conference is an invertebrate, joyless thing—not worth having. "The churches will never gain the allegiance of the young unless their attitude is more frank, more courageous, and more in accordance with reality." "Romance and deliberate self-control do not, to my mind, rhyme very well together." "If sexual union is a gift of God it is worth learning how to use it." It should be cultivated so as to bring physical satisfaction to both, thus constituting a firm bond between two people and making for durability of the marriage tie. Passion, Lord Dawson continues, is a worthy possession; most men who are any good are capable of passion. But passion must not be confounded with sensuality. The real and effective restraints to passion are "a loving and sympathetic companionship, the privileges of parenthood, the exacting claims of career, and that civic sense which prompts men to do social service." Therefore Lord Dawson would like to add to the objects of marriage in the Marriage Service the following statement: "The complete realization of the love of this man and this woman, the one for the other."

Passing on to deal with the subject of birth control, the speaker began by pointing out that birth control is here to stay, and that as the Roman Catholic Church with its authority and discipline cannot check it, it is most unlikely that Protestant churches could do so. Absence of birth control means, according to Lord Dawson, late marriage, and late marriage means illicit intercourse with all its baneful consequences. The suggestion that the only birth control justifiable is voluntary abstention from connubial relations is dismissed with the statement that "such abstention would be either ineffective, or, if effective, impracticable and harmful to health and happiness."

In discussing artificial control, Lord Dawson says that it is no more unnatural to control conception by artificial means than to control childbirth by artificial means. The only question is whether these artificial means are for the good or harm of the individual and the community. Contraceptives do harm when they are used to render unions childless or inadequately fruitful. They may do good by limiting the number of children and spreading out their arrival in such a way as to serve their true interests and those of their home. There is no evidence that the use of contraceptives leads to excessive indulgence: by the time and circumstance of their application they involve prudence and control. Lord Dawson appears to favour a family of four born at proper intervals. In the view of other authorities also this is the minimum of children that should be born of every marriage if due allowance is to be made for deaths in infancy and childhood.

The reasons which lead parents to limit the number of their children are sometimes selfish, says Lord Dawson, but more often honourable and cogent. He gives the following: The desire to marry and to rear children well equipped for life's struggle; limited means; the cost of living; burdensome taxation; and, amongst the educated classes, the desire of women to take a part in life and their husbands' careers. Furthermore, Lord Dawson asserts that it must be admitted that baby after baby every year or eighteen months wears and often exhausts a woman's strength. It is at this point that we venture to raise two questions. Is it true, in the first place, that the average woman is exhausted or worn out by having a large family? Secondly, can Lord Dawson's other reasons be distinguished easily from forms of selfishness? Another writer[2] has given the reasons commonly adduced for restricting the number of births succinctly: "First, economy; second, comfort; third, safety; fourth, race welfare." And this writer has no difficulty in disposing of the first three reasons to his own satisfaction. He is prepared to admit some soundness in the fourth reason; but points out that people who wish to remain with none or with one or two children do not commonly bring this forward in support of their determination. Lord Dawson desires the selection of the times of conception of children so as to give those children a better upbringing rather than selfishly to leave the sequence of offspring to blind chance. The other view is that such selection destroys the spirit of adventure, reduces the incentive to exertion on the part of the father for the maintenance of his family, and is in reality the more selfish course. It is possible that this view receives some corroboration from the state of affairs that has prevailed in France.

We have tried to summarize Lord Dawson's speech in such a way as to avoid misapprehension. And we have expressed no views of our own because the matter seems at present by no means ripe for dogmatic statement. While admiring the courage of Lord Dawson in bringing this subject before such a body as the Church Congress, and inviting discussion of what he considers a vital problem, we are inclined to regret the absence from the speech of exact and definite indication why Lord Dawson advocates the practice of birth control. Is it on the ground of over-population, or for the improvement

[1] London: Nisbet and Co. 1922. (Demy 8vo, pp. 27. 1s. net.)

[2] Dr. J. W. Ballantyne's article on Birth Control in *Mothers in Council*, October, 1919.

of the race eugenically; or that more time and care may be spent in the bringing up of the fewer children actually born; or, lastly, is it for the more hedonistic purpose of allowing time for the "complete realization of the love of this man and this woman, the one for the other"?

It is possible, however, that in ventilating the subject before a clerical and lay body, Lord Dawson had in mind an indirect object—namely, to use popular interest in such a manner as to induce the medical profession to come to an opinion upon birth control and the measures to be taken to ensure it. The adoption of birth control as an established principle involves so many social, economic, and even political questions that the medical profession may well hesitate before making any collective pronouncement. It appears to us that for the present it must remain a matter of conscience between the two parties to a marriage in the first place, and secondly, if they seek medical advice, for the judgement of the doctor they may consult. But there are undoubtedly cases in which further pregnancy is undesirable or extremely risky. In such cases the patient or her husband is almost certain to ask for advice. The majority of medical men would probably feel justified in advising contraceptives in such cases; the propriety of birth control under certain conditions is thus conceded. The best and most innocuous method is therefore a subject proper for discussion by a medical society. The recent discussions in our correspondence columns prove that on the question of whether birth control should be favoured as a general practice medical opinion is divided. It is useless to shut our eyes to the fact that it is largely practised among the educated and well-to-do classes, or to the further fact that statistics collected before the war showed that the highest birth rates were recorded in the poorest districts, there being an almost regular fall from the fashionable districts to the slums.

TUBERCULOSIS.

THE seventeenth and eighteenth volumes of the *Traité de Pathologie Médicale et de Thérapeutique Appliquée*[3] offer a remarkably complete survey of tuberculosis by a number of distinguished collaborators. The first of the two volumes takes a general view of the tuberculous infection, its etiology, pathological anatomy, and bacteriology. There are also excellent chapters upon treatment of every kind, directed, not against particular localizations and manifestations of the disease, but against tuberculosis regarded in a wide sense as a specific infection. The second of the two volumes deals with the various clinical forms of tuberculosis as it affects the infant, the adolescent, and the adult. The book keeps marvellously to the limits implied in the title of the series—namely, a treatise of medical pathology. It is a topographical voyage of discovery through the human body in search of tuberculous lesions and the signs they give rise to during life. The colour photographs illustrating the morbid anatomy are as good as anything we have seen.

The book is one of reference and is full of information, but the index is not detailed enough to make the information readily accessible. The index treats of generalities; the value of the book really consists in a wealth of minute particularities.

Professor KLEMPERER'S book on pulmonary tuberculosis[4] contains the results of the author's observations during twenty years of hospital and private practice. The post-war increase in pulmonary tuberculosis in the central countries of Europe induced him to think that a summary of modern views on consumption would be useful to medical men, but his book, though carefully written and well arranged, does not contain a great deal that is new to English physicians. Like most observers, he comes to the conclusion that the bovine bacillus plays a relatively small part in the production of pulmonary tuberculosis in man, holding that though it may set up other lesions it rarely attacks the lungs. He believes that the majority of all cases of tuberculosis in man are the outcome of infection contracted in childhood which has lain latent in the lymphatic glands. Two principal portals of entry are open to the bacillus—namely, the respiratory tract and the alimentary canal; Klemperer thinks they divide the honours fairly equally. The chapters on symptomatology are clear and tersely written. Physical examination is described in detail, with particular attention to the importance of percussion, and the account of auscultatory signs is admirable in its simplicity and avoidance of the confusion arising from the use of practically synonymous terms, a snare to which so many writers on pulmonary tuberculosis succumb. Radioscopic examination is allowed a prominent place in diagnosis. Nearly half the volume is devoted to treatment, especial attention being paid to the therapeutic use of tuberculin. The indications for and technique of the operation for artificial pneumothorax are excellently discussed, but on the whole the book is rather disappointing. It is mainly a painstaking compilation of other authors' views, and we miss the personal experience and deliberate judgement which Professor Klemperer may be credited with possessing and which would have lent interest to his book.

Dr. WALTERS'S book on the *Domiciliary Treatment of Tuberculosis*[5] is designed to furnish the practitioner with a compact and reliable guide to the treatment of pulmonary tuberculosis. The first hundred pages deal with diagnosis, home conditions, general methods of treatment, and the relation of health and infection to ventilation and cleanliness. The remainder of the book is given to the methods of treatment, special and general, found best in the various contingencies of the phthisical patient's life. Dr. Walters writes clearly, and perusal of his pages makes it obvious that he has had great experience in dealing with consumptive patients. He gives full accounts of the numerous specific and general remedies for tuberculosis that have had or perhaps are still having their day; it is possible that the general practitioner would be glad to have the author's opinion as to their real value more often than it is given. The book may be recommended as an up-to date and thoroughly practical account of the subject with which it deals.

PATHOLOGY OF THE NERVOUS SYSTEM.

IN a brief preface to their volume entitled *Pathology of the Nervous System*[6] the authors, Drs. BUZZARD and GREENFIELD, state their belief that in offering it to medical students and practitioners they are meeting a real need. We may say at once that they may be congratulated on having admirably achieved their object. Such a monograph is a valuable addition to the information available in the ordinary text-books of medicine. No attempt has been made to enter deeply into disputed questions of histology or pathogenesis, but the ordinary morbid anatomy, both naked-eye and microscopic, of the diseases of the nervous system is well described throughout and interest is stimulated by a brief consideration of the relations between the anatomical and the clinical phenomena. The first three chapters contain a succinct but comprehensive account of the doctrine of the nature of the neurone and of its degeneration and regeneration. This is supplemented in the next two chapters by accounts of the paths of infection in the central nervous system and by an excellent description of the cerebro-spinal fluid and the changes which it exhibits in various diseases. In the next section, dealing with the developmental and familial diseases, short but adequate descriptions of the morbid anatomy are given and enough clinical details to render the account more valuable. Chapters on injuries and circulatory disturbances of the brain and spinal cord follow. The chapter on syphilis of the nervous system is good and concise; the chief forms which it may assume are described separately, while insistence on the essentially identical processes at work is emphasized in a preliminary account of the general features of the syphilitic lesion.

In the section on other infective diseases there are particularly useful accounts of poliomyelitis and lethargic encephalitis. Special praise must be accorded to the chapter on tumours of the brain and spinal cord, which is richly illustrated by many admirable plates. Among the diseases of obscure origin we find satisfactory accounts of the pathology of disseminated sclerosis and subacute combined degeneration of the spinal cord. Two useful appendices contain brief

[3] *Traité de Pathologie Médicale et de Thérapeutique Appliquée.* Published under the direction of E. Sergent, L. Ribadeau-Dumas and L. Babonneix. *Tuberculose.* Tomes xvii and xviii. Paris: A. Maloine et Fils. (Tome xvii: Demy 8vo, pp. 387; 16 figures, 2 plates; Fr.20. Tome xviii: Demy 8vo, pp. 811; 48 figures. 9 plates; Fr. 35.)

[4] *Die Lungentuberkulose; ihre Pathogenese, Diagnostik und Behandlung.* By Professor Dr. Felix Klemperer. Berlin and Vienna: Urban and Schwarzenberg. (Sup. roy. 8vo, pp. 164; 5 plates, 16 figures. M.40.)

[5] *Domiciliary Treatment of Tuberculosis.* By F. Rufenacht Walters, M.D., B.Sc., M.R.C.P.Lond., F.R.C.S.Eng. London: Baillière, Tindall, and Cox. 1921. (Demy 8vo, pp. 302; 3 figures. 12s. 6d. net.)

[6] *Pathology of the Nervous System.* By E. Farquhar Buzzard, M.A., M.D., F.R.C.P., and J. Godwin Greenfield, B.Sc., M.D., M.R.C.P. London: Constable and Co., Ltd. 1921. (Med. 8vo, pp. xv + 334; 102 figures. 30s.)

descriptions of staining methods and details of the examination of the cerebro-spinal fluid.

The numerous photographs, both macroscopic and microscopic, with which the book is lavishly supplied, are a feature of great value; another useful feature is a short bibliography at the end of each chapter. The book has been brought well up to date, as the accounts of lethargic encephalitis and of such subjects as Lange's colloidal gold test will show. It is in no sense a work of reference for the professed neurologist, but rather a manual for those who desire more detailed information on pathology than can be supplied by the usual textbooks of medicine or neurology.

Unfortunately, the costs of printing and illustrating have combined to enhance the price of this volume, so that it may, we fear, prove somewhat high for students without much money to spare for books outside those which are absolutely necessary. To the more senior student, and especially those who intend to devote particular study to neurology, this volume will come as a thoroughly reliable and almost essential addition to their library.

UROLOGY.

THERE is no specialty in medicine that combines so fully the interest of surgeons and physicians as urology. For this reason a work like MARION'S *Traité d'Urologie*[7] should appeal to a very great number of readers. Written as it is with an admirable lucidity, and illustrated with excellent plates, it should be of interest not only to those who have become experts in this particular domain of medicine, but to all practitioners. One of the chief assets in the science of urology is the exactness of its methods of diagnosis, and the author has done well to devote considerable space to the description of methods of exploration. He has even included a brief survey of the commoner laboratory investigations required in the complete examination of a case. This summary should prove useful to those surgeons who carry out the simpler laboratory examinations in their own consulting rooms. The third portion of the work is devoted to signs and symptoms. The value and significance of pain as an indication of disease in the genito-urinary tract is fully dealt with. The section on haematuria as a diagnostic sign is particularly good. Following this comes the section on pathology, using the term in its most comprehensive sense to embrace the study of the causation, pathological anatomy, symptoms, diagnosis, and prognosis of disease. A useful addendum to the chapters devoted to treatment is a list of formulae and specimen diets used in the treatment of various pathological conditions. Authors not infrequently diminish the value of their recommendations as to treatment by failing to supply their readers with those details which may make all the difference between success and failure. By giving the exact formulae of various therapeutic agents and actual diets suited to different diseases Marion has avoided this error. The chapters on operative technique are well illustrated, so that the majority of the operations described may be understood with a minimum of labour. The work concludes with a series of coloured plates of urethroscopic and cystoscopic views. The quality of these varies considerably; some of them are realistic, whereas others err on the side of overcolouring. Some of these plates have already appeared in previous publications by the same author. The treatise is, for the convenience of the reader, published in two volumes. Considering the excellence of the printing, the workmanship of the plates, and the quality of the paper, the price charged for the work cannot be considered excessive. Altogether both the author and the publishers are to be congratulated on the result.

To the second edition of his *Traité Chirurgical d'Urologie*[8] M. FÉLIX LEGUEU has made many notable additions, especially in the matter of illustrations and coloured plates. Urology has made considerable progress since the appearance of the first edition in 1910, and as a result many of the chapters have been considerably modified and augmented. The author's appointment to the professorial chair formerly held by Guyon has given him facilities for drawing on the clinical material of the Necker Hospital, and much of the new matter included in the present work has been derived from the laboratory, out patients' department, and the museum of that institution. The chapter on tests of renal function has been to a great extent rewritten, since it is only during the last ten years that the importance of this subject has been recognized. In summing up the value of the various tests that may be applied the author points out that we have no absolute criterion of the health of a kidney. We can only speak in relative terms, hence the necessity of multiplying the controls and tests; in the multiplicity lies safety, and only by the conscientious use of all the means of exploration at our disposal can we avoid the pitfalls which surround the practice of renal surgery. A new feature of the work is the chapter on the pathology of the suprarenal capsule, although, as a rule, these structures receive scant attention from genito-urinary surgeons. The association between the suprarenal capsules and the kidneys is, however, so intimate that it is probably wise to include the description of them and their lesions in a work that aims at being as complete as that under review. Another new chapter is that which deals with pararenal growths and perirenal haematomata. The experiences of the late war have added much to our knowledge of gunshot wounds of the kidneys and urinary tract. This has necessitated an expansion of the chapter devoted to this subject as well as the development of the paragraph dealing with plastic methods of repair. Other features of the new edition are the use of local anaesthesia in prostatectomy, a description of the vesico-transperitoneal route for the closure of a vesico-vaginal fistula, and the study of the ureter after nephrectomy. Many new illustrations and plates have also been added. As a result of this great increase in illustrations and text alike it has been necessary to divide the work into two volumes. However high may have been the reputation of the first edition, we have little doubt that the second will have a greater, for it is one of the completest works on urology that has yet been published. Dr. Félix Legueu, with the great facilities of the Necker clinic at his disposal, is well qualified to edit such a work, and his present volumes reflect credit, not only on the clinic of the Necker Hospital, which he administers, but also on the French school of genito-urinary surgery in general.

A HANDBOOK FOR THE MAIMED.

ALTHOUGH a man who has some teeth left is not called toothless, and one who has two or three coppers cannot strictly be called penniless—and many other analogies might be cited—yet it appears that one may have three-fourths of the normal allowance of limbs and yet be described as "limbless." It would show more sense of the meaning of words, and so be more logical, if less euphonious, to follow the French example and use the term "amputee," on the analogy of payee, employee, and trustee. The authors of the *Handbook for the Limbless*[9] are, however, not the original sinners in this respect, and, whoever may have been the first offender, the misnomer has been adopted by the Ministry of Pensions, thus showing how poor a safeguard against the commission of blunders in the use of English is the competitive examination of the Civil Service Commission.

Apart from its title, we have nothing but praise for this small book, from the foreword (there is a preface too) by Mr. John Galsworthy to the excellent index. It has been published, and is sold at less than cost price, with the good intention of giving the maimed man all the information which is likely to be useful to him in connexion with his disablement. The report of the committee of inquiry into the comparative advantages of metal and wooden limbs, which was noticed in our issue of November 12th, 1921, p. 805, occupies the first place in the book. The interesting account of the disabled drivers' rally, held last June in Richmond Park, after tests on Epsom Downs, shows how well arm and leg amputees can manage motor cars, even without any special fittings, but certain special attachments which have been found useful are shown in the illustrations. This demonstration and the records of amputee drivers prove that there is no reason to consider them more liable to accident than unmaimed men. The handbook contains many useful hints the outcome of the experiences of the wearers of artificial limbs, and full instructions in exercises and muscle training for those who have lost a leg are given by Miss M. Randell and Mr. G. A. Ponsonby. Detailed information is also given as to

[7] *Traité d'Urologie.* Vols. i and ii. Par G. Marion. Paris: Masson et Cie. 1921. (Roy. 8vo, vol. i, pp. xx+1 to 572; 160 figs.; vol. ii, pp. 573 to 1052; 15 plates, 258 figs. Fr. 1·0 net.)

[8] *Traité Chirurgicale d'Urologie.* Vols. i and ii. Par F. Legueu. Deuxième édition, revue et augmentée. Paris: F. Alcan. 1921. (Sup. roy. 8vo, vol. i, pp. 1 to 944; 335 figures, 6 plates; vol. ii, pp. 945 to 1881; 523 figures, 5 plates. Fr. 160 the two vols.)

[9] *Handbook for the Limbless.* Edited by G. Howson. Published by The Disabled Society, 48, Grosvenor Square, London, W.1. (Demy 8vo, pp. xiii+225, with illustrations in the text. Price 1s., or 1s. 4d. post free.)

the opportunities for training and employment offered to the disabled. An interesting section upon sports, including swimming, riding, and boxing, is contributed by General Sir E. C. Bethune, Captain du Buisson, Major P. A. Leahy, and others. Full particulars are given of the pensions and allowances to which amputees are entitled.

After looking through this book the reader is more than ever impressed by the pluck and spirit of the disabled, and is confirmed in the opinion that what matters most is the determination to succeed despite all difficulties.

SYNTHETIC DRUGS.

THE number of synthetic drugs is enormous, and the aim of Dr. PERCY MAY, in his book on *The Chemistry of Synthetic Drugs*,[10] has been to give a clear account of the principles which underlie their production. In spite of the fact that the relation between chemical structure and physiological action is by no means rigid, it serves as an indication of the roads along which investigations should be pursued. The opening chapters, devoted to the study of the theory of action of synthetic drugs, the effect of the introduction of various elements and radicles, and the chemical changes which drugs undergo in the organism, are of interest. Other chapters deal with local and general anaesthetics, antipyretics, antiseptics, purgatives, and the organic preparations of arsenic and antimony.

The methods of preparation of the more important substances are indicated, and throughout numerous references to the literature and to patent specifications are given. It will be observed that for the most part the references are to German literature; and it must be admitted that prior to the war the industry was almost entirely in German hands. Since that time much has been done in this country, and it is to be hoped that the enterprise of our manufacturers will provide our chemists with the necessary facilities and stimulus to prosecute research for new compounds which may have value in practical therapeutics. Perusal of this book cannot fail to stimulate; it is well up to date, and will be of great value to all interested in the subject of synthetic drugs.

NOTES ON BOOKS.

THE thirty-eighth annual volume of *The Year Book of the Scientific and Learned Societies of Great Britain and Ireland*[11] contains much information that would not otherwise be available without much trouble and research. To prepare a classified outline of the higher intellectual work in this country during the past twelve months, as it has found expression through the numerous learned and scientific societies, cannot have been an easy task, and much credit is due to the publishers, who from year to year continue to make this useful contribution to the advancement of science. The different sections of the volume include science generally; astronomy, mathematics, and physics; geography, geology, and mineralogy; biology, including microscopy and anthropology; economic science and statistics; mechanical science and architecture; law; literature, history, and music; archaeology; and, among others, medicine. In the section devoted to medicine are found details of the personnel of the Ministry of Health, the names of the principal officers, and the titles of the papers read at the Annual Meeting of the British Medical Association, the titles of the papers read at all the sections of the Royal Society of Medicine, the titles of the publications issued by the Medical Research Council during the year, and of the scientific papers published from the Lister Institute, together with similar details of the leading medical societies in London and throughout the provinces, Scotland, and Ireland.

Willing's Press Guide[12] is a useful compilation, giving particulars of the address and price of periodical publications issued in Great Britain and Ireland, and information also with regard to colonial and foreign newspapers, with the addresses of their London offices. It contains two pages of antiquarian interest, in which a list is given, with notes, of existing newspapers and periodicals founded in the seventeenth and eighteenth centuries; in many instances there has been a change of title, but continuity has been maintained. Leaving aside the *London Gazette* (first called the *Oxford Gazette*, publication having been begun there in 1665), the *Edinburgh Gazette*, and the *Dublin Gazette*, the oldest newspaper is believed to be the *Worcester Post*, founded in 1709. Within the next quarter of a century newspapers were founded in Nottingham, Stamford, Bristol, Hereford, Norwich, Canterbury, Leeds, Northampton, Gloucester, Reading, York, Salisbury, Chester, and Derby. The first newspaper in Ireland seems to have been the *Belfast News* (1737), and the first in Scotland the *Aberdeen Daily Journal* (1748).

Dr. CHAVASSE'S *Advice to a Wife*[13] has been such a worthy classic for a generation that the appearance of a new edition calls for brief notice only. This is the seventeenth authorized edition, and altogether four hundred and fifty thousand copies of the various editions have, it is stated, been issued. No wonder that Dr. G. T. WRENCH felt, when called upon to revise the book for this new edition, that to alter it beyond what was absolutely required by the march of progress would savour of sacrilege. As he well puts it: "Chavasse shows such a perfect handling of his theme, he is so wise, so genial, so trustworthy, so pillared with the best of English literature, that to change his book seemed to me as unfortunate a necessity as it is to renovate a beautiful yet timeworn building." That is the right spirit to show towards such a book, and it will suffice to say here that Dr. Wrench has succeeded in his process of "restoration" so completely that not even the connoisseur can raise a protest. There is no book of its kind that we can more cordially recommend to the young married woman who wishes a guide to the management of her own health.

The sixth annual report of the National Council for Combating Venereal Diseases, covering the period from June, 1920, to June, 1921, has just been issued.[14] It contains lists of officers, committees, and members of the Council; a report of the annual meeting and the address of the President, Lord Gorell; and a general account of the Council's activities during the period under review, together with the balance sheet and statement of accounts. Fifty pages are devoted to overseas branch reports and home branch reports. The branches of the Council now number 81 in England, 4 in Scotland, 7 in Wales, 1 in Ireland, and 10 overseas.

[10] *The Chemistry of Synthetic Drugs.* By Percy May, D.Sc.Lond., F.I.C. Third edition, revised. London: Longmans, Green and Co. 1920. (Demy 8vo, pp. 260. 12s. 6d. net.)

[11] *The Year Book of the Scientific and Learned Societies of Great Britain and Ireland.* Thirty-eighth annual issue. London: C. Griffin and Co., Ltd. 1921. (Demy 8vo, pp. vi + 366. 15s. net.)

[12] *Willing's Press Guide.* Forty-ninth year. 1922. London: James Willing, Ltd. (2s. 6d. net.)

[13] *Chavasse's Advice to a Wife on the Management of Her Own Health.* Revised by G. T. Wrench, M.D., B.S.Lond. Seventeenth edition. London: J. and A. Churchill. (Cr. 8vo, pp. 346. 2s. 6d. net.)

[14] National Council for Combating Venereal Diseases, 80, Avenue Chambers, Southampton Row, W.C.1.

MEDICINAL AND DIETETIC PREPARATIONS.

Vaccines by the Mouth.

ANTIDYSENTERIC tablets and antityphoid and bile tablets are, the proprietors state, vaccines prepared according to the instructions of Professor Besredka, and are intended for oral administration. Besredka has advocated the administration of antityphoid and antidysenteric vaccines by the mouth. He found that typhoid vaccine when so given was efficacious only when bile was added, but that bile was not necessary in the case of the antidysenteric vaccine. Besredka claims that "the method of vaccination per os realizes three essential conditions: it is harmless, it is efficacious, it is rapid" (*Bull. de l'Institut Pasteur*, vol. 18 February 29th, 1920). It is obvious that if vaccines can be prepared which are efficacious when given by the mouth a very great therapeutic advance has been made. Anyone who served as medical officer to a battalion during the war will appreciate how much labour and trouble such an antityphoid vaccine would have saved a few years ago. Besredka's views as to the efficacy of vaccines given by the mouth have not, however, met with general acceptance, and the value of these preparations is still, therefore, a matter of uncertainty. The agents in this country are the Sealand Trading Company, Buchanan Buildings, 24, Holborn, London, E.C.1.

Coagulen-Ciba.

Coagulen-ciba is an extract obtained from blood platelets, and is recommended as a haemostatic suitable for oral, hypodermic, and intravenous administration. We find that the substance, when injected intravenously, causes a distinct shortening of the coagulation time of rabbit's blood, and does not produce any marked toxic effects. One gram of coagulen-ciba represents 20 grams of dried blood, and it contains a large amount of thrombokinase. The preparation is recommended for local application as a haemostatic, and also for hypodermic or intravenous use in cases where the coagulation of the blood is deficient. Good clinical results are reported by numerous authors. Coagulen-ciba is supplied in powder,

in compressed tablets, and in ampoules containing 3 per cent. of the powder in solution. The precautions which should be observed in administering the preparation are indicated on a circular which, we understand, accompanies each package. Coagulen-ciba is made by the Society of Chemical Industry in Bale, Switzerland, and is supplied in this country by the Clayton Aniline Company, 68½, Upper Thames Street, London, E.C. 4.

Tuberculous Egg Prepared Antigen.

Tuberculous egg prepared antigen is, it is stated, prepared by the process devised by Professor Besredka. In this method tubercle bacilli are grown in a nutritive medium of which the basis is yolk of egg. The four days old culture is killed by heat, diluted with sterile water, and an emulsion formed. The sero-diagnosis of tuberculosis is carried out according to a technique very similar to that of the Wassermann reaction for syphilis; the emulsion of dead tubercle bacilli is used as the antigen in the reaction. It is claimed that in cases of established tuberculosis the reaction is constantly positive, and that in cases of suspected tuberculosis a positive reaction renders the presence of that infection very probable. The exact clinical value of this reaction is still a matter of uncertainty. The preparation is sent out in sealed phials of 3 c.cm., and the manufacturers state that it will keep indefinitely. The agents in this country are the Sealand Trading Company, Buchanan Buildings, 24, Holborn, London, E.C.1.

MEDICAL AND SURGICAL APPLIANCES.

Electroscope and Endoscopic Tubes.

DR. IRWIN MOORE (London, W.) has designed combined electroscope and endoscopic tubes in order to simplify the technique and armamentarium for direct laryngo-tracheo-bronchoscopy and oesophagoscopy, and to reduce the difficulties met with in the exploration of the bronchi and oesophagus.

The important feature, he writes, is that both proximal and distal lighting is combined in one instrument, and that interchange is possible whilst the endoscope tube is *in situ*, without disturbing its position or necessitating its withdrawal, at the same time ensuring an enlarged field of vision and intensity of light for illumination, which can only be satisfactorily obtained with tubes of large diameter. By a simple turn of the screw which fixes the lamp shaft to the arm, the entire illuminating portion of the apparatus may be removed or replaced. Since the handle contains no mechanical or electrical connexions, as in the Brunings pattern, it may be readily boiled and sterilized. The advantages of the apparatus are obvious. The mechanism allows of the easy passage and free manipulation of instruments under direct inspection, without obstructing the field of operation; again, if the patient coughs, the mirror may be instantaneously switched out of the way, and therefore is not soiled by coughed-up material. Also, by dispensing with the mechanism by means of which the handle is rotated from side to side in Brunings's instrument, displacement of the distal end of the endoscopic tube, which frequently occurs, is prevented. The main principle on which these endoscopic tubes is designed is the same as that of the Chevalier Jackson tubes, but they are made of a size corresponding to the diameter of the larger tubes of Killian, Brunings, and Chevalier Jackson. Passing down the inside of the tube is an open half-circular slot for the passage of the distal lighting carrier. In this way the light carrier is out of the way of instruments, and there is no reduction in the inside diameter of the tube.

The apparatus has been made by Messrs. Mayer and Phelps, New Cavendish Street, W., to whom Dr. Moore desires to give credit for surmounting the mechanical difficulties. Full particulars can be obtained from the makers.

A Simple Aspirator.

Mr. H. O. GUNEWARDENE, M.B., B.S.Lond. (Clinical Assistant, National Hospital for Diseases of the Heart), writes: Having felt the want of a simple aspirator I have, in conjunction with an engineer friend, Mr. B. O. W. Cantrell, designed a combined aspirating syringe and trocar, shown in the illustration, and used it in place of the ordinary aspirator. The disadvantages and difficulties attending the use of the ordinary aspirator are well known; with the combination instrument depicted there is no rubber connexion to become perished and no valves to get out of order. The instrument may be used as a simple syringe for exploring, and it can also be used as a siphon for aspirating. It is convenient to carry, easy to sterilize and manipulate. It consists of a large "Record" type of syringe with trocars and cannulae of various sizes, and has been made by Messrs. Allen and Hanburys, 48, Wigmore Street, London, W.1.

THE WORK OF THE MEDICAL RESEARCH COUNCIL, 1920-21.

[SECOND NOTICE.]

IN dealing last week (p. 74) with the report of the Medical Research Council for 1920–21, attention was directed especially to the work of the National Institute for Medical Research. We will now attempt to give some account of the research schemes in specific subjects carried out at various centres, but the task is much more difficult, because to enumerate all the many and various inquiries, experimental and clinical, subsidized or directed by the Council, would be to compile a list of nearly all the subjects with which progressive clinical medicine is at present concerned. We can only pick out a few topics which may afford the reader a general idea of the many directions in which the Council is giving assistance.

Vitamins.

The inquiries into the nature and effects of accessory food factors, still conveniently termed "vitamins," although the theory on which the word was formed has been abandoned, have been continued during the year under the direction of a special committee appointed jointly with the Lister Institute of Preventive Medicine. The chairman of the committee is Professor Gowland Hopkins, and its members are Dr. Drummond, Professor Harden, F.R.S., Mr. W. B. Hardy, F.R.S., Dr. A. W. J. MacFadden, C.B., of the Ministry of Health, Professor C. J. Martin, F.R.S., Director of the Lister Institute, and Professor Edward Mellanby, now of Sheffield, with Dr. Harriette Chick as secretary. During Miss Chick's absence in Vienna Professor Harden has acted as secretary. The total annual expenditure of the Council under this head is nearly £10,000.

Under Professor Harden's direction, Dr. S. S. Zilva, working with Dr. Miura at the Lister Institute, has made quantitative estimations of the fat-soluble factors and has studied the very high potency in this respect of cod-liver oil; they have also carried out experiments on the diffusion of the antineuritic and antiscorbutic factors through membranes of varying permeability, with a view to obtaining indirect evidence of the size of the molecules of the vitamin substance and to devising means for its isolation. Experiments with ultra-violet light suggest that the destruction of the antiscorbutic factor at the temperature of boiling water is due rather to oxidation than to the direct action of heat. Dr. Zilva has continued with Dr. H. Schütze his study of the influence of deficient nutrition on resistance to disease, and, in conjunction with Professor Harden, has confirmed the absence of the antiscorbutic factor in fresh beer, but has demonstrated that yeast can synthesize the antineuritic factor. Dr. Drummond and Dr. Zilva are inquiring into the nutritive values of different commercial oils and fats; in addition to studying the process of manufacture in many factories in this country and on the Continent they paid a special visit to the Norwegian cod-liver oil industry. The results of this inquiry have immediate practical applications to the industry, and have been communicated to the Government of Newfoundland. They have thrown light also upon questions of general biological and geographical interest.

The work done by Professor and Mrs. Mellanby at Cambridge and Sheffield has been the subject of special reports, the last of which was noticed at length in our issue of January 7th (p. 20). At Cambridge Professor F. G. Hopkins has continued his investigations into the nature and properties of vitamin A; they have led indirectly to the acquisition of fresh facts with regard to the mechanism of oxidation in living tissues. Dr. C. Da Fano has continued at King's College his investigations into the structure and pathology of the ductless glands and the nervous system in deficiency diseases. The expenses of the clinical inquiry as to deficiency diseases in Vienna, carried out by Miss Chick and her colleague, have been borne jointly by the Medical Research Council and the International League of Red Cross Societies. It is hoped that a full report of the results of the work will soon be available; meanwhile preliminary reports on different departments of the subject have been published in our columns, the last being the paper by Drs. Harriette Chick and E. J. Dalyell on the influence of foods rich in

accessory factors in stimulating development in backward children, published in these columns on December 24th, 1921, p. 1061.

Rickets.

Under the direction of Professor C. J. Martin, Dr. E. M. Luce has studied the relation of calcium metabolism to the parathyroid and sexual glands. Erdheim and Korenchevsky have alleged that the parathyroids become hypertrophied in spontaneous cases of rickets in animals. Dr. Luce has studied the condition of these glands in rats in which rickets has been produced by diets deficient in calcium and in vitamin A; he has observed an increase in size without any unusual character in the cells. Erdheim has stated that rickets follows loss of the parathyroid glands in rats. But Professor Korenchevsky, who receives a whole-time grant, has made experiments on this line at the Lister Institute, and, provided due attention was given to the diet of the animals (a factor which appears to have been neglected in the original studies), his results have always been negative. In a series of experiments on the part played by diet in the causation of rickets in rats, he first gave a simple diet on which the animals remained healthy and grew well, producing abundance of healthy offspring, and then observed the influence of various conditions, including modifications of diet, in the case of both young and adult animals. Before the conclusion that rickets had been produced in any given case was accepted rigid conditions were enforced, involving a great number of chemical analyses and histological examinations.

"Confinement in small cages was not found to produce rachitic conditions, and negative results were obtained from attempted infection with live cultures of *B. perfringens*, *B. sporogenes*, and *B. bifermentans*. Conditions similar to rickets were produced by dietetic deficiency of calcium alone and of vitamin A alone, and most readily in the absence of both these substances; the changes were most marked in young rats where the mother had also been similarly dieted during pregnancy."

Tuberculosis.

The problem of tuberculosis is being attacked by a number of workers in different places. There are subcommittees on phthisis in relation to occupations, on tuberculin, and on the bacteriology of tuberculosis, but in no instance is it possible to do more than make a progress report.

Professor S. L. Cummins has been investigating, with the assistance of Miss C. M. Acland, the applicability of Kliene's "opsonic end-point" to the early diagnosis of tuberculosis. Experiments which were begun at the Royal Army Medical College and the Brompton Hospital Sanatorium are now being conducted in the laboratories of the Welsh National Memorial Association at Cardiff and at the Glan Ely Hospital. Some points of great interest with regard to the natural mechanism of self-protection against tuberculosis have been noted. It appears that the specific chemical substances which arise to aid phagocytosis act rather by increasing the activity of the phagocytes than by opsonizing or sensitizing the bacilli. The experiments afford some support of the earlier work of Sir William Leishman on stimulins.

Dr. A. Stanley Griffith, at the Cambridge Field Laboratories, has continued his study of the bacteriological characteristics of tubercle bacilli from different sources—lupus, abdominal tuberculosis, and tuberculosis of bones and joints. The human and bovine cultural types have been differentiated and their virulence investigated. With Sir Leonard Rogers, Dr. Griffith has estimated the curative effects of sodium morrhuate, sodium soyate, and sodium gynocardate, all of which have been found beneficial in leprosy. The results in tuberculosis were negative. In cultural experiments the first two drugs were found to favour the growth of the tubercle bacillus and the third to inhibit it. The inquiry at the Brompton Hospital into the value of artificial pneumothorax has advanced so far that Dr. Burrell, with the assistance of Dr. A. S. MacNalty, is now engaged in preparing a report upon the whole investigation, which includes the collation of the results of over a hundred cases.

Dr. A. Rowand is continuing his study of the early symptoms of disease in children, with special reference to tuberculosis; he has the advantage of working at the St. Andrews Institute for Clinical Research under the direction of Sir James Mackenzie, and of the collaboration of the members of the institute staff, and of the help of all the practitioners in the town. The scheme is designed to keep under observation all the children in St. Andrews from birth onwards; special attention is being paid to the appearance of palpable glands during infancy, to exhaustion and its value as an early symptom, to the conditions associated with the earliest appearance of enlarged tonsils or of adenoids, and to the effect of the diets in common use on failure of health and on the development of impaired digestion in later years. *X*-ray examinations of the chest in healthy children are being made at an early age to determine the prognostic significance of root shadows as revealed by the subsequent histories.

Dr. H. K. Ward, who receives a whole-time grant and works under the direction of Professor Dreyer at Oxford, has attempted to standardize degrees of tuberculous infection and to produce a standard tuberculin. Professor C. H. Browning, with the help of Miss Gulbransen and Miss Meldrum, has made further investigations into the behaviour of different strains of tubercle bacilli in experimental infections, and the work, upon which a report will shortly be published, has been carried far enough to enable a beginning to be made with experimental tests of the curative values of various compounds.

Grants to the King Edward VII Sanatorium at Midhurst, to Brompton Hospital Sanatorium, and the Peamount Sanatorium near Dublin, for the collection of records of the after-histories of sanatorium patients, have been continued, and a supplementary grant was made to Midhurst for the collection of the family histories of 300 patients and of collation of the records of ten years' work by Sir StClair Thomson on laryngeal tuberculosis.

At St. Bartholomew's Hospital, London, Dr. R. G. Canti and Dr. G. L. Lyon-Smith, both receiving part-time grants, have made preliminary investigations in the hope of devising a rapid and efficient practical method of recognizing the tubercle bacillus in milk without recourse to animal experiments. A collection has been made of the different acid-fast bacilli liable to be confused with *B. tuberculosis*, and methods of differential staining are being studied. At the University of Liverpool Professor J. M. Beattie, with the help of Mr. F. C. Lewis, is continuing his experiments on the electrical sterilization of milk. A report was published last year, but further experiments are being carried out with regard to the thermal death point of bacteria in stationary and moving columns of milk, and on the relative efficiency of the electrical method and of the application of external heat under similar conditions.

Disseminated Sclerosis.

Investigations begun by Dr. Gye as long ago as 1912 show that disseminated sclerosis can be communicated by the injection into rabbits of the cerebro-spinal fluid from a rapidly progressing case. His early results were confirmed by other workers, and have been amplified by his fresh series of experiments, which have recently been reported in *Brain*.

At the University of Glasgow the investigation of the etiology and treatment of the disease is being continued by Dr. D. K. Adams, who has the assistance of Drs. E. M. Dunlop, J. W. S. Blacklock and Wilfred Scott. The results so far obtained are against the theory of syphilitic origin; the colloidal gold reaction appears to be constantly positive. Prolonged courses of treatment with neosalvarsan have given favourable results. Dr. Adams related some of the results of his inquiry to the Section of Neurology and Psychiatry at the annual meeting in Newcastle. His paper was published in our columns of November 19th; to this we may refer readers for further information.

Radiotherapy.

The large amount of 5 grams of radium bromide, recovered from military uses, was entrusted by the Government to the Council for medical research purposes, and was lent in the first instance to the Middlesex Hospital for initial experiments and therapeutic trials. A report will shortly be published by the Council. The chief results of the clinical work was to show that by superficial applications of the radium a number of inoperable cases of malignant disease had been rendered operable. Application of a dose of radiation which did not seriously damage the skin was followed by temporary disappearance of the growth, but recurrences frequently occurred after a few months unless the exposures were repeated. In order to obtain uniform irradiation surface applications should be combined with the surgical insertion of radium.

The whole amount of radium bromide at the disposal of the Council has now been divided into a number of parts; this has been done at the National Physical Laboratory after

a due period of stabilization by Professor Sidney Russ and Mr. F. Harrison Glew. Certain quantities have now been granted on loan to the Middlesex Hospital, University College Hospital, King's College Hospital, St. Bartholomew's Hospital, the London Hospital, and the Radium Institute; to the General Hospital, Birmingham, to King Edward VII Hospital, Cardiff, and to the Royal Infirmary, Aberdeen. The Irish Public Health Council in Dublin has also received a portion, and is organizing a local scheme of distribution. At each centre special attention is being concentrated upon a particular form of malignant disease and its treatment, and each centre will make a yearly report. In selecting the centres regard has been had to the facilities for pathological work in the study of the many problems that confront the radiologist.

Experiments have been carried out at the Middlesex Hospital by Professor Russ and Dr. Chambers on certain effects of *x* rays; they indicate broadly that the reaction in a patient may not depend only upon the cellular changes occurring in the tumour mass itself, but also upon the effects of the rays upon various processes seated in normal tissues. The results are in many respects parallel to those obtained at the Rockefeller Institute, New York. "The possibility of stimulating instead of killing cancer cells by an insufficient dose of radiation," the report continues, "has already been shown experimentally, and it is clear that in the radiological treatment of malignant disease we are confronted with a balance of forces of which the nature in detail can only be revealed by further investigation."

A grant has been made to the Radium and X-ray Workers' Protection Committee to enable Dr. J. C. Mottram, of the Radium Institute, to examine the blood in normal persons and in persons exposed to radiation.

ASYLUM ADMINISTRATION.

A MEMORANDUM, appropriately headed by the motto, "*Audi alteram partem*," has been issued by the Mental Hospitals' Association[1] as a reply to the numerous criticisms of asylums in this country. This association is composed of the visiting committees of public asylums, and it is thus particularly well fitted for the task it has undertaken. Comprising as it does the elected representatives of the ratepayers who are called upon to govern asylums, the association has a more intimate knowledge of the economic position and general conditions of these institutions than any other section of the public. The views expressed in this pamphlet carry weight and merit careful consideration. In the introduction the writers draw attention to the improvements which have taken place in the care of the insane poor during the last thirty years; it is pointed out "that since the passing of the Lunacy Act, 1890, the conditions have been vastly altered for the better. The old barrack-like buildings in which the insane poor were herded together have all been improved, in instances beyond recognition, and the true hospital or healing spirit is cultivated in these institutions, by management and staff alike, to an extent which was never dreamed of thirty years ago." The steady progress in the care of the insane which is thus described can scarcely be disputed, and it is probably true to say that the average standard of comfort in British asylums exceeds the average of that found in any other country. It is otherwise as regards the progress of psychiatry as a science, and we have much to learn from other countries in this respect. In 1914, when the war broke out, the Board of Control, the visiting committees, and the Medico-Psychological Association were fully alive to the necessity for organized research and facilities for teaching. The pamphlet makes this evident in outlining the work of the Mental Hospitals' Association in endeavouring to further improved methods for the treatment of incipient insanity, and a conference of visiting committees in the year 1912 resulted in certain small grants being made from the Imperial Exchequer through the Board of Control in aid of research work. The grants are now consolidated and administered by the Medical Research Council. There is a significant gap in the activities of the committees as a collective body until 1918, when the pamphlet records the actual formation of the Mental Hospitals' Association. In the interval the war had broken out, with the result that the hopes and ambitions of asylum workers were frustrated, and regression rather than progress was inevitable. Little reference is made in the pamphlet to the war period, when asylums were carried on under conditions of the greatest difficulty. The writers might well have done so if their chief aim had been the refutation of the specific charges levelled recently against asylum management, since these have referred in a large measure to abnormal conditions which could, at the time, scarcely be remedied. A constructive policy is outlined in this pamphlet, and this we feel to be of much more value than a detailed reply to criticisms would have been.

The writers point out that while improvements have been made in the care and treatment of the insane, the asylum committees have felt for some time past that a wide field for further ameliorations still exists. Reforms are suggested in the following directions: (1) Increased grants for research; (2) amendment of the lunacy laws, in order that incipient cases of mental illness may be treated before the malady has reached such an advanced stage as to compel the certification and detention of the patient in an asylum; (3) power to receive voluntary boarders in public asylums; (4) the creation of out-patient departments; (5) an increased grant from the Exchequer in aid of the cost of maintaining patients in asylums; (6) the elimination of the taint of pauperism. With these suggestions we are in entire sympathy, and they are clearly indicative of a progressive and enlightened policy on the part of the asylum committees of this country.

A detailed scheme is outlined for the treatment of early cases of mental disorder which deserves careful consideration. As an immediate solution of the difficulty of securing suitable accommodation for the treatment and study of early cases it is suggested that seven or eight asylums, situated as near as possible to populous centres possessing good general hospitals with medical schools, might be evacuated, as was done when certain asylums were converted into war hospitals and utilized for the treatment of mental ailments free from any connexion with the lunacy laws. This proposal has much to commend it, but we observe an absence of any reference to the difficult question of power of detention. We feel that this subject cannot be ignored in view of the lack of insight which the subjects of a true psychosis so frequently exhibit. They may feel themselves wicked, persecuted, or unusually happy and vigorous, but on the whole they do not regard themselves as ill, and they have, in consequence, no wish to be treated or detained in a hospital. Yet many of these early cases are highly irresponsible and liable to perform antisocial acts, and it would thus appear that some form of detention against the wish of the patient may be required in some cases if the clinic is to serve its complete social function. It is, of course, useless to cite the fact that soldiers were treated during the war for mental disorder without any form of certification, as they were under military discipline and were not in a position to leave the hospital if they wished to do so.

The views expressed by the Mental Hospitals' Association cannot fail to exert a beneficial influence by enlightening the public as to the work of their representatives on behalf of the insane; their publication at this moment is opportune in view of the conference the Board of Control is holding this week with the representatives of the visiting committees and medical staff of the asylums, since it reveals an earnest desire to improve the conditions under which the insane are treated. Ultimately, as stated in the introduction to this pamphlet, "it rests entirely with the public as to what, if any, better conditions should prevail in connexion with the treatment and care of the mentally afflicted."

[1] *Thirty Years' Administration of Public Asylums in England and Wales.* By the Mental Hospitals' Association. London: Hodder and Stoughton. (Pp. 29. Price 6d.)

A JOURNAL with the title *Le Maroc médicale* is to be published at Casablanca, Morocco, under the editorship of Dr. E. Speder.

DR. J. MORTON HOWELL, of Dayton, Ohio, has been appointed diplomatic representative and Consul-General for the United States to Egypt.

THE *Malthusian*, a monthly journal published for the last forty-five years by the Malthusian League, is to be replaced this month by a monthly publication to be called *The New Generation*. Its general policy will be to advocate "early marriage combined with rational birth control."

MR. WILLIAM C. REID, of Edinburgh, who died on December 23rd, 1921, has left a total of £68,000 to charities, including £8,000 to Edinburgh Royal Infirmary, £8,000 to the Longmore Hospital for Incurables, Edinburgh, and £5,000 to the Royal Victoria Hospital for Consumption, Edinburgh.

British Medical Journal.

SATURDAY, JANUARY 21ST, 1922.

THE SOURCES OF VITAMINS.

THE composition, origin, and action of vitamins have been the subject of a very large amount of research during the past few years. Progress has of necessity been slow, for the subject presents difficulties which are almost unique. Vitamins are very unstable bodies of unknown chemical composition; they occur in minute quantities, and the only way in which their presence or absence can be proved is by animal-feeding experiments lasting several weeks. These characters represent a cumulation of difficulties which renders quantitative work of even approximate accuracy extremely difficult. Though the chemical nature of vitamins is still unknown recent researches have thrown light on the conditions under which they are formed. It is generally recognized that mammals are unable to synthesize vitamins and are entirely dependent upon the supplies which they obtain either directly from vegetables or at second hand from the flesh or milk of other animals.

It has generally been assumed that plants can synthesize vitamins, but doubt has been cast upon this by various workers. Bottomley stated in 1916 that certain plants obtained these accessory food substances from the growth of certain organisms in the soil. Recently Williams and other workers have gone further and have claimed that vitamins, and especially the water-soluble vitamin B, are necessary for the growth of yeast and other micro-organisms. These statements made it very difficult to conceive where and how the vitamin supply of the world was produced. Fortunately recent work has cleared up this question. Nelson, Fulmer, and Cessna[1] grew yeast for a year on a medium composed of inorganic salts and cane sugar; they made subcultures every other day, and calculated that the final solution only contained 1×50^{-180} of the original constituents of the medium or yeast. This yeast thus grown on a synthetic diet was found to contain a normal amount of vitamin B. Harden and Zilwa[2] also showed that yeast grown on a pure synthetic diet contained almost as much vitamin B as yeast grown under normal conditions.

These experiments seem fully to establish the contention that yeast can grow freely without any supply of vitamins, and that it can synthesize vitamin B from a diet of inorganic salts and sugar. Yeast does not synthesize the fat-soluble vitamin A, but the origin of this vitamin appears to have been demonstrated by recent experiments of Coward and Drummond.[3] These observers showed that dried seeds contained little vitamin A, and that this amount was not increased by germination, but that as soon as the seeds formed green leaves a considerable amount of vitamin A appeared. Experiments made with Tradescantia shoots grown on Sachs's solution also showed that green plants could synthesize vitamin A from inorganic salts. The production of vitamin A was shown to be dependent upon the presence of chlorophyll in plants, for etiolated seedlings contained no vitamin A, nor did white leaves from the interior of cabbages. In green seaweeds, containing chlorophyll, vitamin A was present, but red seaweeds contained none. Mushrooms were found to be almost completely deficient in vitamin A. It appears, therefore, that the presence of chlorophyll is essential for the synthesis of vitamin A, and that chlorophyll-containing plants can synthesize vitamin A when fed on a pure synthetic diet.

The chemical nature of vitamin A is still unknown. Coward and Drummond found that it could be extracted by fat solvents from green leaves and that it appeared in that fraction of the fat which is resistant to saponification. Vitamin A was at one time believed to be one of the yellow plant pigments. These plant carotinoids are the source of the lipochromes which produce the yellow colour of animal fat, and, as a general rule, those animal fats which contain most lipochrome also contain most vitamin A. Various workers have shown, however, that this association is not constant and that the association between lipochromes and vitamin A is probably accidental.

These researches give a fairly clear picture of the vitamin exchange in living organisms. Vitamin B is synthesized by all forms of plant life, whilst vitamin A is only synthesized by plants containing chlorophyll. Fishes and whales obtain the rich supply of vitamin A present in their oil either directly or indirectly from the chlorophyll-containing algae or from the chlorophyll-containing organisms in the *plankton*. Land animals derive their vitamin A supply from the green vegetables.

The source of the vitamin A in milk has been shown very clearly by Drummond, Coward, and Watson.[4] They measured the vitamin content of the milk of a herd of cows from April to July, 1921. The animals were stall fed until the end of April, and in April their milk contained little vitamin A; after the cows had been a week at grass their milk yielded a high content of vitamin A, which persisted during May and June. The drought last year spoilt the pasture, however, so that in July the cows had to be fed on cake, and the vitamin A content of the milk at once dropped. A quantitative study of the vitamin A content of butter showed that during the process of butter making a certain amount of vitamin A disappeared, but that butter could be stored in tins for many months without any marked diminution in vitamin content. The conclusion was drawn that the vitamin A content of butter was much more dependent upon the season at which the butter was made than upon the length of time for which it had been stored. This conclusion is obviously of great practical importance. The cow can only secrete in its milk the vitamins which it receives in its food, and the milk or butter of a cow fed on a vitamin-poor diet will contain very little vitamin. Our knowledge of the importance of vitamins has emphasized the necessity for obtaining fresh milk in which the vitamins have not been destroyed, but now it appears that it is equally important to obtain milk from a cow receiving a vitamin-rich diet. Drummond and his fellow workers have examined also the vitamin A content of the body fats of animals, and in this case also they found that the fat of a stall-fed animal often contained very little vitamin A; whilst, on the other hand, the fat in tinned beef obtained from grass-fed animals was often rich in vitamins after many months' storage. These conclusions as regards the vitamin content of tinned foods apply only to fats which have been stored under good conditions, and are probably true only for the case of vitamin A, which is more stable than either vitamin B or C.

It is, of course, a matter of extreme difficulty to preserve vitamin C; the only substances in which this vitamin is preserved for any length of time are the fruit juices, and even from them the vitamin slowly disappears. Harden and Robison[5] found that when dried orange juice was stored in a desiccator for fifteen months it lost 50 per cent. of its vitamin C content, and dried

[1] Nelson, Fulmer, and Cessna, *Journ. of Biol. Chem.*, 77, xlv, 1921.
[2] Harden and Zilwa, *Biochem. Journ.*, 458, xv, 1921.
[3] Coward and Drummond, *Biochem. Journ.*, 550, xv, 1921.
[4] Drummond, Coward, and Watson, *Biochem. Journ.*, 540, xv, 1921.
[5] Harden and Robison, *Biochem Journ.*, 521, xv, 1921.

orange juice kept under ordinary conditions lost 85 per cent. of its activity. The supply of vitamin A and vitamin C therefore appear to present two separate problems. In the normal adult there is really no problem, for an adequate quantity of green vegetables in the diet provides a full supply of all three vitamins. In the case of bottle-fed babies, however, the supply of vitamin A appears to depend chiefly upon the diet on which the cows supplying the milk are fed, while the supply of vitamin C is determined chiefly by the treatment which the milk undergoes during its passage from the dairy to the infant. The conclusions of Coward and Drummond certainly suggest that during the winter it is desirable to add cod-liver oil, or some other rich source of vitamin A, to the food of infants on a milk diet.

EDUCATION AUTHORITIES AND SCHOOL MEDICAL OFFICERS.

THE consolidated regulations for special services of elementary education, made by the Board of Education in 1920, direct that a local education authority "shall appoint a school medical officer, who will be responsible to the [Education] Authority for the efficient carrying out of any arrangements made by the Authority for the medical inspection, supervision, and treatment of children of elementary school age within their area, and also for the discharge of such other duties as may be from time to time assigned to him"; and that "the Authority shall annually submit to the Board a report from their school medical officer describing and tabulating the work of himself and his staff during the 12 months ending 31st December." It is further laid down that the records required by the Board must be available for examination by the Board's inspectors, and the term "inspector" is defined to mean "exclusively one of His Majesty's Inspectors of Schools, one of the Medical Officers of the Board, or any other persons employed by the Board for the purpose of inspection."

Throughout these regulations there is no reference to the functionary employed by many of the larger local education authorities, and described in some areas as the "secretary of education," in others as the "director of education," and in others again as "secretary to the education committee" or "chief education officer." Since the passing of the Education Act of 1902 special appointments of this kind have been made by an increasing number of authorities, including most of the county councils. Such posts are not statutory; but the persons holding them are now numerous enough to have formed themselves into an association, and self-important enough to have drawn up a memorandum laying down what they conceive to be the relations which should subsist between the school medical service and the general educational administration, of which they evidently regard themselves as the keystone. According to our information, this document attempts to lay down the principle that in each area the school medical service —essentially a health service—should be placed under a lay official, the secretary or director of education.

The Board of Education, as we have said, directs that the school medical officer shall be responsible to the local education authority, and that the authority itself shall submit his report to the Board. This, however, does not go far enough to suit the Association of Secretaries and Directors of Education, which prefers to ordain that "the chief function of a school medical officer is to act as adviser to the local education authority through the *chief education officer* on all matters pertaining to the health and physical welfare of children"; and that the medical officer's duty is to report any defects in sanitation or equipment of school buildings which may be detrimental to the health of the children to the chief education officer and to none else. The height of presumption is, however, reached in the following declaration: "It is important to establish the principle that the school medical officer's report is a report to the Education Committee, who are consequently at liberty to publish such report in whatever form or with whatever alterations they see fit. . . . The report should, in common with other documents to be placed before the Education Committee, be presented through the chief education officer." In other words, the Local Education Committee is to give a free hand to its education officer to mutilate or rewrite its medical officer's reports. On what grounds, it may well be asked, is this claim to the lay editing of a medical report put forward? Here is the answer: "The school medical officer or the medical officer of health, when acting as such, is not in the position of medical officer of health acting in that capacity, in that his report is not made in accordance with statutory conditions as to publication." That there may be no doubt as to who means to be master, the right is demanded in so many words that all communications from the school medical officer or his assistants shall pass though the chief education officer; that all forms and circulars issued by the former shall be approved by and issued through the latter; and that all reports of the former of whatsoever kind shall be presented to the Local Education Committee through the latter. "In short, the Chief Education Officer must be the chief executive officer of the Education Committee in *all* matters."

We were aware that minor bureaucrats suffered at times from delusions of grandeur. In this instance the delusions would seem to be collective. Even so, little harm might perhaps be done if these local officials amused themselves by airing their pretensions in strict privacy; but their memorandum, to which we have referred, appears to have been circulated by the County Councils Association to county medical officers, not for comment and criticism, but "for private and personal use." So far as we are aware neither the County Councils Association nor its education committee has expressed an opinion upon the claims advanced by the Association of Directors and Secretaries of Education. It would be of interest to know whether the County Councils Association has yet formed any opinion on the administrative principle involved, and if so, what its nature may be.

The matter thus being common knowledge among those most concerned, the British Medical Association and the Society of Medical Officers of Health have decided that prompt action is needed. The two organizations have agreed to send in a memorandum to the Minister of Health and to ask him to receive a deputation. The opportunity will no doubt be taken to point out the dangers of delay in providing for unification of all agencies which are definitely connected with the health of the nation, and the risks of leaving the school medical service outside the general constructive organization of preventive medicine.

THE SOCIAL STUDY OF A COMMUNITY.

IN the rough and ready study of geography in vogue in schools twenty years ago or even less, the names of the rivers of India and the comparative heights of the mountains of the world were learned by rote and forgotten at leisure. To-day, however, under modern teachers of geography, the schoolboy begins with the study of his immediate surroundings, their physical features, climate, industries, local government, and so proceeds to wider horizons and more general knowledge. In human physiology advances have generally been achieved, first by the intensive study of small details, by the careful watching of one aspect of one part of an organ, and then by

weaving the knowledge thus gained into the fabric of the whole. So in the life of a nation real advance is not made by chaotic political ideas and war-cries, which loom so large one day and are forgotten the next, but by the development of true knowledge, built up little by little, of the things that constitute the foundations of national well-being. With such an object in view a pioneer effort has been made in Wales by a survey of the industrial, social, and educational life of one town during a period of ten years. The study was made in Aberdare, during the decade from 1910 to 1920, by the members of the Aberdare group of the Welsh School of Social Service. A comprehensive paper based on the considerable mass of material collected was read by Miss Dorothy Rees at the annual meeting, in 1921, of the School of Social Service, and an interesting summary of this paper has been published in *The Welsh Outlook* for January, 1922. Aberdare is a coal-mining district, where the population has increased from 1,500 in 1801, when it was still, of course, agricultural, to 54,000 in 1920. Within the decade studied electricity was introduced; it was generated from house refuse, and employed both for lighting and power and for the tramways. Two housing schemes were begun in 1911, and early in the decade Acts and by-laws for notification of births, employment of children, and shop hours were adopted. Land was secured in all the wards for recreation spaces and open-air swimming baths, and public parks were laid out; Aberdare, too, was early in the field in establishing infant welfare and maternity work. In education the town was a pioneer in the organization of physical training and play centres, and modern methods of education have been introduced. The education authority (for good or for evil) was the first in the kingdom to appoint a whole-time school medical officer, and a school clinic was opened in 1911. A prominent feature in the social life of the town has been the provision of workmen's halls, institutes, and free libraries, which knit together practically the whole community. Aberdare has long been renowned as a centre of music lovers, and in the last ten years over a dozen dramatic societies have also been established. The political life of the community has not differed much from other towns in the country, but its tolerance of widely differing political creeds has been noteworthy, and during the war extremist speakers, who were bitterly assailed elsewhere, were allowed in Aberdare to make public their opinions, although 5,650 of its men served in the army and navy. This miniature Domesday Book is not only a definite achievement but an example worthy of wide imitation.

THE MATERNAL MORTALITY PROBLEM IN NEW ZEALAND.

ACCORDING to statistics published by the United States Department of Labour in May last, New Zealand took the second highest place in regard to mortality from childbirth and the diseases of pregnancy. This publication led the Minister of Health of the dominion to appoint a special committee to investigate the facts and suggest a remedy. The report of the Committee has now been published in the official periodical of the Ministry, the *Journal of Health and Hospitals* (October, 1921), and it is not without its lessons for us in this country, where the persistence of the mortality rate from the same causes is a standing reproach. The Committee produce a graph covering the period from 1872 to 1920, which shows that after certain more or less ordinary fluctuations there has been a sharp rise in the maternal mortality rate in New Zealand from 1913, reaching a maximum of 6.48 per 1,000 live births in 1920. The principal causes of death are stated as: (1) "Puerperal septicaemia; (2) puerperal albuminuria and convulsions; (3) puerperal haemorrhage; (4) accidents of pregnancy and other accidents of labour." Thirty-six per cent. of the average maternal mortality for the last quinquennium was the result of puerperal infection, and it is to this subject that the Committee have almost exclusively devoted their report. They give as a reason for so doing that "deaths from sepsis are largely preventable," but if that is so, deaths from albuminuria and puerperal convulsions are even more so. We should like to have seen this point mentioned, and the life-saving value of a routine examination of the urine of every pregnant woman emphasized more specifically. For the high death rate from infection the Committee blame: (1) "Abnormal virulence of organisms and diminished resistance of individuals, due possibly to conditions during and subsequent to the war." Included in these conditions are housing difficulties and lack of domestic help. There is also evidence of "an abnormally high death rate due to septic conditions following on attempts to procure abortion." (2) With regard to unsuitable surroundings, it is said "private houses are often quite unhealthy places for confinements. Moreover, some private maternity hospitals are not free from conditions which easily lead to septicaemia and allied troubles." (3) The unduly large use of instruments and other operative measures is condemned; medical witnesses, it is said, stated that too often "the use of anaesthetics and instruments was urged upon the practitioner by the patients and their friends." Making all allowance for the difference between the conditions prevailing in New Zealand and those prevailing here, it may be accepted that all three conclusions are more or less applicable to this country, with perhaps the exceptions of any "abnormally" high rate of abortion-mongering, and the urgency of patients and their friends for the employment of instruments. All we would say about the first conclusion is that it is and must remain more or less a matter of opinion. But we are particularly glad to see reference made to the unsuitability of many private houses for confinements, for we hold that this is a big factor in our own problem at home. If we are to reduce our maternal mortality it is not enough to insist upon the proper training of medical students and nurses; we must educate the people to a comprehension of the necessity for the provision of suitable conditions for confinements. There is no gainsaying that every confinement partakes of the essential characters of a surgical operation. The placental site is a large wound surface, and in every first confinement at least there are numerous other small breaches of the surface. Yet practitioners are expected to confine women in conditions in which they would naturally hesitate to "operate," and the illusory immunity with which they appear to do so tends inevitably to produce a contempt of the risks. Many a man does—and in some degree is forced by circumstances—put his hand into a uterus under conditions in which he would never dream of putting that same hand into the peritoneal cavity. Again, we are glad to see the reference to private hospitals or nursing homes. The powers of inspecting such institutions, vested in the local authorities under the Midwives Acts in this country, would be kept in greater respect and efficiency by a little exercise. The recommendations of the Committee are very interesting. With the spirit of them we have no quarrel, but they deserve attention also from the fact that they indicate what may be expected under the bureaucratic rule of an active Ministry of Health. "That every case of maternal death shall be forthwith personally investigated by the Medical Officer of Health, who shall report to the Director-General of Health." "That every case of notified puerperal sepsis shall be forthwith personally investigated by the M.O.H. who shall report to the D.G.O.H." "That all maternity hospitals, public and private, make a quarterly return to the department of morbidity rate as well as mortality rate." This is an excellent recommendation, especially in its emphasis of the importance of the morbidity rate; but we should prefer to see a moral compulsion in response to an awakened public opinion rather than a legal compulsion. Recommendation 5 includes compulsory post-graduate study for practising maternity nurses every two or three years—of course at the expense of the State. Recommendation 8 is that "efficiently equipped private midwifery wards for paying patients should be established in connexion with public midwifery institutions or in other suitable places." This is greatly needed in this

country also. In Recommendation 11 the Committee seeks the co-operation of the profession in preventing excessive use of instruments. This is a most vital recommendation. Putting aside for the moment the inestimable value of instruments properly used in the presence of proper indications, there can be no doubt that thousands of labours are every year conducted instrumentally with detrimental results, which would terminate more favourably without such interference. The gynaecological wards of every hospital afford more than ample testimony to this. Lastly, the Committee lays stress on the importance of ante-natal clinics, and in private practice "the serious importance of ante-natal examination." With this we entirely agree. It is indeed but part and parcel of the proper modern conduct of obstetric practice, and while ante-natal clinics are a comparatively recent development, it is a reproach to the profession that adequate ante-natal examination in private practice should require any stressing.

INDUSTRIAL USES OF MICRO-ORGANISMS.

IN view of the proposal recently put forward by Mr. Chaston Chapman, F.R.S., for the foundation of an institute for the study of industrial microbiology [1] it is of interest to note the examples he gave in the Cantor lectures for 1921 of the advantages reaped by industry from the scientific study of bacteria yeasts and moulds. In the ordinary fermentation of sugar by yeast 3 to 4 per cent. of glycerin is formed as one of the by-products. Early in the war the Germans, faced with a fatal shortage of fats, turned attention to the problem of the increased production of glycerin by yeast fermentation of sugar. As the result of carrying out the fermentation in an alkaline medium in the presence of sodium sulphite the direction of the enzyme action was so changed that glycerin was formed to the extent of 36 per cent. Americans in the later stages of the war produced glycerin by fermentation of molasses in the presence of sodium carbonate, and from 20 to 25 per cent. of the sugar taken was converted into glycerin. Another example of a recent modification of an ancient industry is the modern production of sugar from starch through the agency of a mould of the genus Mucor. From very early times moulds have been used in the East for the manufacture of wine from rice. The so-called Chinese yeast was analysed by Professor Calmette, who traced the diastatic action to a mucor mould. The organism was obtained in pure culture and has been used extensively in France for the manufacture of alcohol from starch, maize, rice, and potatoes. Since the process was first introduced, twenty years ago, more than six million hectolitres of alcohol have been prepared by this method, which illustrates the fact that by biochemical research and the application of modern scientific methods a crude process of very little utility, and dating almost from time immemorial, has in the short space of twenty years been raised to a position of high technical importance to the whole world. Recently the process has been further simplified by making use of the starch-liquefying enzyme secreted by *B. mesentericus* for the purpose of preparing the grain for the mucor. In this modification, therefore, three agencies are employed: First, a starch-liquefying enzyme secreted by a bacillus; secondly, the diastatic enzyme of the mould; and, finally, the alcoholic fermentation of the sugar by the yeast. As an example of an industry which has not benefited by the advances of modern science the vinegar industry may be mentioned. The manufacture of vinegar was certainly being carried on in this country in the early part of the seventeenth century, and in the reign of Charles II its taxation was provided for in the Revenue Act of 1673. As is well known, vinegar results from the oxidization of alcohol to acetic acid through the agency of micro-organisms, different varieties of vinegar being formed from the different alcoholic beverages oxidized. The apparatus employed is very crude, the alcohol being allowed to trickle over twigs of wood on which are growing the acetifying organisms. Vinegar manufacturers make no attempt to use pure cultures of the acetifying bacteria, and they rarely know anything of the precise character of the organisms they are using or the most suitable conditions for obtaining the maximum yield of vinegar. The result is that the process is wasteful and often uncertain in its results. Perhaps the most impressive example of the application of bacterial ferments for industrial purposes is exemplified in the "acetone process" developed during the war, when the demand for acetone was so greatly increased. This process consists of the bacterial fermentation of starch by the acetone bacillus under strictly aseptic conditions, and the separation of the two main liquid products, butyl alcohol and acetone, by fractional distillation. An enormous amount of acetone was manufactured in this way both in England and in Canada during the war, but the commercial possibilities of the method in times of peace depends on whether or not a use can be found for the butyl alcohol formed in such large quantities. In discussing the possibilities of the use of lower fungi for food of man Mr. Chapman drew attention to the German discovery in 1916 of an organism which during its growth produced fat and also built up protein from ammonia salts without any form of organic nitrogen. By a special chemical process it was found possible to prepare from it a food extract resembling extract of meat in its chemical and physical properties. Thus was built up in a few hours from glucose, converted sawdust, and ammonium phosphate, through the agency of this microscopic organism, large quantities of edible protein and fat. These few examples of the utilization of micro-organisms for industrial purposes illustrate the importance of close co-operation between science and industry.

[1] BRITISH MEDICAL JOURNAL, December 10th, 1921, p. 1004.

DR. THOMAS FOWLER'S SOLUTION.

FAMILIAR as is Fowler's solution, the identity of Dr. Thomas Fowler is not recognized in the *Dictionary of National Biography;* there is, however, an account of him in the late A. C. Wootton's *Chronicles of Pharmacy* (vol. ii, p. 133, 1910), and the *Presse médicale* of Paris of June 4th, 1921 (*Supplement*, p. 808), contained an interesting historical note by Dr. H. Leclerc. The following is the history of Fowler's solution: Towards the end of the eighteenth century a secret patent specific against ague was popular in Berlin, and these "tasteless ague and fever drops" came into vogue in this country, and were occasionally used from 1780 to 1783 at the General Infirmary of the county of Stafford, where Fowler was physician and a Mr. Hughes the apothecary. In October, 1783, Hughes told Fowler that he had found that the active constituent of this secret remedy was arsenic, and that he had made up a solution of arsenic to take its place; this substitute was tested and compared as regards its effects on patients, and some modifications in its composition were made. In 1786 Fowler published a pamphlet of 128 pages, "Medical Reports of the Effects of Arsenic in the Cure of Ague, Remitting Fever, and Period Headaches; together with letters from Dr. Thomas Arnold of Leicester and Dr. Withering, describing their experience of the effects of arsenic in intermittents." This contained a number of cases so treated, and pointed out that previously arsenic had been regarded in the light of a powerful poison only; indeed, writing again in 1788 he found it necessary to combat this prejudice against its medicinal use. Fowler gave full credit to Hughes for his investigations, but, as Leclerc points out, the preparation should perhaps be more justly called Hughes's solution. It is generally recognized that Fowler introduced the modern medicinal use of arsenic, and it is interesting to note that he derived it from a quack remedy. He also wrote *Medical Reports of the Effects of Tobacco in the Cure of Dropsies and Dysuries*, describing the diuretic action of tobacco; this passed into a second edition. Fowler was born in 1736 at York, where from 1760 to 1774 he kept a chemist's shop; he then went to Edinburgh and took his M.D. degree, and settled down to practice in Stafford. In 1793 he was seized with a painful affection, variously diagnosed by his colleagues. Leclerc summarizes the condition as "paroxysms of convulsive asthma with very painful symptoms of angina," and

a year ago there was on sale an autograph letter, written from York on June 3rd, 1795, by Fowler, asking for advice and detailing his symptoms as those of angina, to W. Withering, M.D., F.R.S., of Birmingham, the introducer of digitalis, which Withering endorsed with the diagnosis of spasmodic asthma. After leaving Stafford and trying all sorts of remedies for two years Fowler recovered completely, and in 1796 became physician to the lunatic asylum founded by the Quakers at York, where he died in 1801.

THE PROGRESS OF CREMATION IN ENGLAND.

DURING 1921 the number of cremations carried out at British crematoriums was, curiously enough, 1,922. This figure was 126 more than the total for the previous year, but 109 below that for 1919, the "record" number of cremations in that year being mainly accounted for by the influenza epidemic. The bodies of many notable persons who died last year were cremated, including, amongst medical men, Sir Felix Semon, Sir George Savage, Dr. P. S. Abraham, Mr. H. E. Juler, Dr. A. S. F. Leyton, and Sir Sidney Beauchamp. The hygienic advantages of cremation have been dwelt on so many times in these columns that the arguments in its favour must be familiar to all members of the medical profession. From an economic point of view it has the advantage of preserving land for the use and enjoyment of the living; it provides, moreover, a permanent resting place for the dead, in accordance with the ancient custom of church sepulture. Sir Thomas Browne, in his famous dissertation on urn burial, remarks that "carnall interment or burying was of the elder date. . . . But the practice of Burning was also of great Antiquity, and of no slender extent." The early Christians, he says, abhorred this way of obsequies, but the Jewish nation, though they entertained the old way of inhumation, yet sometimes admitted this practice. Such phrases as "cadaverous and corruptive burials" seem to show his own preference for "urnall interments and burnt Reliques." But cremation, although it is now being adopted in nearly every civilized country, makes slow progress in superseding earth burial as the accepted method of disposal of the dead. Of the fourteen crematoriums in England and Scotland—all placed in large centres of population—it appears that not more than six are at present paying their way. The reason for this is that they are not made use of often enough to cover ordinary working expenses in respect of establishment and maintenance, rates and taxes. The Cremation Society of England finds that, provided it has the support of only some 10 per cent. of the population of any large centre, a crematorium becomes a paying concern; furthermore, unlike a cemetery, it never becomes filled up and useless or a danger to health. Cremation would no doubt progress more rapidly, at least among educated people, if those who favour it recorded their wishes during lifetime and thus identified themselves with the movement. In recent years the Cremation Society of England, whose offices are at 52, New Cavendish Street, London, W.1, has instituted a scheme of registration whereby those in sympathy may record their wish. There is no charge for this service, and no liability attaches to those signing or to their executors, but the society endeavours to give effect to the desire so expressed.

SMALL-POX AND VACCINATION.

IT is stated that there are in England and Wales at the present time about 15,000,000 persons unprotected against small-pox, including great multitudes of unvaccinated children. While it is unlikely that this country, with its admirable public health service, will ever have such a visitation of small-pox as less civilized countries have had in former times, yet the fact remains that small-pox does prefer unvaccinated to vaccinated children. A leaflet which has been issued by the Research Defence Society points out that there is a part of the Gloucester cemetery where 279 unvaccinated children under ten years of age are buried, who died of small-pox in the Gloucester epidemic of 1895–96; with them is only one child out of more than 8,000 who were vaccinated before or during the epidemic. During the small-pox epidemic in London in 1901–2, of the deaths from small-pox in children under ten years of age, 442 were among the unvaccinated and only 2 among the vaccinated; while similarly in Glasgow in 1920, during the epidemic of that year, 36 unvaccinated children died and none of the vaccinated. In the epidemic at Ossett, in 1903, in a school of 169 children living under similar conditions there were 37 cases of small-pox among the 77 unvaccinated children, 5 among the 78 vaccinated, and none among the 14 revaccinated. Vaccination is not our only defence against the spread of small-pox: the disease is fought also by sanitary measures, but the great abatement of small-pox was certainly already achieved by 1812, before the rise of modern sanitary science. The Public Health Act, for instance, did not become law until 1875. The case of a well known public man in London having recently contracted small-pox through exposure to infection in Russia has focused attention again upon this disease, especially as in this case the disease was considered at first to be a somewhat severe form of chicken-pox, which, of course, it resembles closely in its early stages. The London County Council, it will be remembered, has made arrangements, with reference to small-pox, by which medical practitioners in its area can have the benefit of the opinion of a specialist at any time on application to the public health department of the County Council, at 2, Savoy Hill, W.C.2 (telephone: Gerrard, 3641).

POST-GRADUATE COURSES IN LONDON.

THE Fellowship of Medicine and Post-Graduate Association has arranged for a special course in surgery on lines similar to those of the course in medicine now in progress. Much will, no doubt, be learnt from these experiments. It may be, as some critics say, that the first quarter of the year is not the best season, and six weeks may be too long; but the needs and opportunities of post-graduates vary, and we trust that, whatever the result, the Fellowship of Medicine and Post-Graduate Association will be encouraged to repeat the courses at another season and to institute others of shorter duration. The course in surgery will begin on February 20th and conclude on April 1st. The hospitals taking part are the Cancer Hospital, the Chelsea Hospital for Women, the Royal Free Hospital, the Hampstead General Hospital, the Royal Northern Hospital, the Queen's Hospital for Children, the Royal National Orthopaedic Hospital, the National Hospital for the Paralysed and Epileptic, St. Mark's Hospital for Diseases of the Rectum, St. Peter's Hospital for Stone and other Urinary Diseases, and the North-East London Post-Graduate College. There will be a morning and afternoon session on each day of the course, and the appointments will be so arranged as to involve a minimum of travelling. The arrangements are nearly complete, and a syllabus will shortly be available on application to the Secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

KEW GARDENS.

SIR DAVID PRAIN is about to retire, under the age rule, from the Directorship of the Royal Botanic Gardens, Kew, which he has held since 1905. *Nature* announces that he will be succeeded by Dr. A. W. Hill, who has been assistant director since 1907. Sir David Prain, who graduated M.B., C.M. at Aberdeen in 1883, entered the Indian Medical Service in 1884, and three years later became curator of the Calcutta Herbarium, a post he retained until 1898, when he was appointed director of the Botanical Survey of India and superintendent of the Royal Botanic Gardens, Calcutta. This post he held until his appointment to Kew. The Royal Botanic Gardens, Kew, are known to all Londoners as one of the most delightful resorts within easy reach of the centre of the metropolis; but they are far more than that: they are the centre for research in scientific and economic botany of the British Empire, and under Sir David Prain's direction

have maintained the eminent position achieved for them by his distinguished predecessors. He has received many distinctions. He is treasurer of the Royal Society, has been President of the Linnean Society, and is President of the Association of Economic Biologists. During the war he rendered important services to the War Office and other Government departments. His successor, Dr. Hill, is F.R.S., and before his appointment to Kew was lecturer in botany in the University of Cambridge, of which he is a graduate.

INFLUENZA.

In the week ending January 14th the number of deaths from influenza in the 105 great towns of England and Wales exceeded 1,200; in London 551 deaths were recorded, an excess of 197 over the figure of the previous week. It will be noticed that the rate of increase is slackening considerably, and we shall not be surprised if, so far as London is concerned, the last week proves to have been the worst of the present recrudescence. In Nottinghamshire and the West Riding, the earliest areas affected, the crisis is past. Clinically there is no doubt that the disease is generally of a mild type. Pulmonary complications have been less common and less severe. The "heliotrope" pneumonia of 1918 has been excessively rare, and, in the few cases reported, recovery has taken place, which was very unusual in 1918; as the lay press are tempted to thrill their readers with reports of "deadly blue" pneumonia, it is worth bearing the point in mind. So far as our information goes there is a great deal of influenza in Germany, but it has not been reported from France, and the North American continent appears at present to be free.

England and Wales.

WELSH NATIONAL SCHOOL OF MEDICINE.

A PUBLIC meeting to support the appeal of the Prime Minister for £100,000 to provide additional endowment and equipment for the Welsh National School of Medicine will be held at the City Hall, Cardiff, on Wednesday next, January 25th, at 3.15 p.m. The speakers will include Professor Sir Charles Sherrington, President of the Royal Society, the Right Hon. J. Herbert Lewis, M.P. for the University of Wales, Sir George Newman, K.C.B., M.D., and Lord Kenyon, Pro-Chancellor of the University of Wales. The Lord Mayor of Cardiff will be in the chair. It is urged that the sum asked for should be raised before August next, so that the Welsh National School of Medicine may qualify for the annual Treasury grant of £5,000. It is estimated that within a year or two the yearly expenditure of the school will reach £25,000. Money is also required for equipment in the shape of laboratories and apparatus, and for an endowment fund to provide the full complement of professors, lecturers, and trained staff. The organizing secretary of the fund is Mr. Gwilym Hughes, Welsh National School of Medicine, Newport Road, Cardiff.

HOSPITAL ACCOUNTS AND PATIENTS' PAYMENTS.

In view of recent developments in connexion with the income derived from receipts for services to patients, certain modifications have been made in the revised uniform system of hospital accounts by the King Edward's Hospital Fund, the Metropolitan Hospital Sunday Fund, and the Hospital Saturday Fund, which will affect all hospitals in the London area receiving grants from these funds. Instead of the former heading which dealt with the income from patients' payments and under the National Insurance Act, five subheadings are now to be used, which will distinguish the amount of the receipts from in-patients, out-patients, public authorities, approved societies, and other sources. The definition of patients' payments will apply to all receipts on account of services to patients, whether the receipts are from patients themselves, or from their friends, charitable agencies, public authorities, or other sources on their behalf. It is particularly emphasized that only exceptional voluntary payments quite outside the rules of a hospital as to patients' payments should be included under the heading of donations, and all receipts which result from applications made to patients to contribute towards the cost of services rendered should be included under the heading of receipts for services to patients.

A HOSPITALS WELFARE SOCIETY.

The Lewisham, Deptford, and Greenwich Hospitals Welfare Society is, we are informed, raising approximately £100 a week for local hospitals, by means of the "Wilfred Allen scheme" for collecting small amounts from the householders of the district. The scheme is worked by more than 1,700 voluntary workers, and in nine months of last year the society was able to allocate £3,600 to the five local hospitals and the Sydenham Infant Welfare Centre. A large proportion of this sum was taken in pennies from door to door; it is expected that in the present year the amount will be much increased. The secretary, Mr. Edgar F. Brooks (75, High Street, Lewisham, S.E. 13), states that the society welcomes inquiries from other hospitals or areas, and will be pleased to explain matters fully and to help in the organization of any district. The society holds that the voluntary principle "is of paramount importance for the really effective working of the hospitals, and that by an organized effort that principle can not only be maintained but greatly extended." Its desire is to present the scheme as a free gift to the cause of humanity, to maintain the hospitals on the basis of voluntary contributions. It has, we are informed, been adopted with much success in Barking.

METROPOLITAN ASYLUMS BOARD WAR MEMORIAL.

At the meeting of the Metropolitan Asylums Board on January 14th the memorial tablet erected by the Board in memory of officers of the Board who fell in the war, was unveiled by the chairman (Canon Sprankling). The memorial, which was designed by Mr. J. N. Comper, consists of a panel upon which the dedicatory inscription and 132 names of those who gave their lives are cut. The panel is enclosed in a projecting frame, and surmounted by a cornice supporting the Board's arms, the whole being carved in Nailsworth stone and decorated in gold and colour. The chairman, in unveiling the memorial, stated that 1,649 of the staff joined the forces, and 104 decorations and honours were gained. The Board is at present employing over 7 per cent. of disabled men amongst its male staff.

Scotland.

A GLASGOW UNIVERSITY APPEAL.

AN appeal is being made by Glasgow University for funds to extend the Students' Union, the Women Students' Union, the hostel accommodation for students, the Athletic Club pavilion, and to provide an endowment fund for the Athletic Club. Handsomely endowed and equipped for instruction in arts and sciences, in these other respects (which are to-day recognized as equally important in the training of the student) Glasgow takes a humble place in comparison with other universities, and especially with the ancient foundations of England. There was a time in the early history of Glasgow when its college was residential, but the time came when Scotland in general came to pin its faith upon class work and examinations, leaving—if they were considered at all—culture and character to nature rather than nurture. The present Students' Union of Glasgow was presented by Dr. John McIntyre, in 1889, to be "a centre to which the various university societies may be affiliated." At Glasgow the Union is the very heart of the university, but, although the original building has been extended twice, it is now capable of accommodating only a membership of 500. But there are 3,300 men students at the university, of whom 1,200 are members of the Union. There are fifty student societies at present at Glasgow, but their meetings are greatly hindered through the absence of accommodation in the building designed for them. The cramping conditions that affect the men apply equally to the women students of Queen Margaret College, who have urgent need of a new union also. In October, 1920, no fewer than 1,075 women students matriculated, and for them there is available in their union a dining-room able to seat only thirty at a time, while the largest room in the building holds but fifty people. Students of Glasgow have to seek lodgings in the city, and owing to the present shortage of houses the difficulties are many. There is thus a real and urgent call for hostels for about 600 students, men and women, for as things are at present 676 men and 237 women students at the university have

to live beyond twelve miles from the city. The present hostel accommodation provides for fifty women only, and for some forty men. The Athletic Club equally needs assistance; the only pavilion is a temporary erection where the numerous members of the various sections of the Athletic Club have to change in two small rooms, while the women students are even less luxuriously accommodated in a hut. In order to provide a staff sufficient to keep and work the enlarged athletic ground, an endowment is necessary to meet the permanent charges, for there is no resident body of past players to support the club by their subscriptions as honorary members, as is the case in ordinary athletic clubs. The University of Glasgow therefore appeals to all her members and friends to help generously in her efforts to meet these real needs, of which the experience of the past few years has made her more conscious than ever before.

Influenza in Scotland.

In Edinburgh there have been so far comparatively few cases of influenza, which have proved of a mild type, but in Glasgow the number of cases has been steadily increasing, and while the number of deaths has been small the prevalence of the disease has given rise to considerable apprehension. According to the *Glasgow Herald* nearly 200 members of the police force were off duty on January 12th, the majority of whom were suffering from influenza, while among tramway men, who from the nature of their employment are specially liable to attack, there were no fewer than 280 cases. Among school children the disease is likewise spreading, and the number of absences from school is also increased by an outbreak of measles which has occurred. In Kirkcaldy it has been estimated that fully 3,000 people are off work suffering from influenza, and in some cases as many as 50 per cent. of the employees of business houses are ill. The suggestion has been made in Edinburgh that, owing to the fact that all trained nurses are fully engaged, an emergency staff of those who have had nursing experience should be formed, whose services might prove very useful in case the influenza epidemic reaches Edinburgh.

Glasgow Medical Lunch Club.

At the weekly meeting of this club on January 12th, in Ferguson and Forrester's, Buchanan Street, Dr. Frank W. Martin presided, and Dr. James A. Adams was present as the guest of the club. After lunch Dr. Adams, who represents the Royal Faculty of Physicians and Surgeons of Glasgow on the General Medical Council, gave an address in which he referred more particularly to the efforts being made, or about to be made, to raise the standard of medical education in general. He discussed the proposal to raise the standard for the D.P.H., proposals which if accepted would render the diploma very difficult to obtain. A higher qualification of this kind was in his opinion suitable for those who wished to specialize in public health, and should be additional to, and not replace, the present diploma. Dr. Adams finally made a strong appeal for a larger membership of the Royal Faculty in Glasgow, so that its present influence in medical matters, local and general, might be strengthened.

Bellahouston Hospital.

At the monthly meeting of the Fellows of the Royal Faculty of Physicians and Surgeons of Glasgow, held on January 9th, 1922, the following resolution was passed respecting the administration of Bellahouston Hospital:

> After careful consideration the Faculty are of opinion that the report of the Committee of Inquiry into the management of Bellahouston Hospital affords a complete vindication and exoneration of the administration of the hospital and of the medical and surgical staffs.

Ireland.

Medical Advance and Development in Belfast.

(From our Belfast Correspondent.)

The large benefactions of the late Mr. Henry Musgrave of Belfast have raised considerable debate amongst those interested in the public institutions concerned; some of these bodies will no doubt be glad of the immediate relief in this time of financial difficulty. With regard to the Royal Victoria Hospital, it is considered an opportunity for some large developments. With great foresight and care the financial authorities of the board of management have kept the income at a high level; the workmen's contributions are liberal and much increased, and in the hospital itself economy has been pressed in all departments, provided that efficiency was not sacrificed. Much praise is due to Colonel Deane, ex-superintendent, and to his indefatigable successor Colonel Forrest. The result is that towards the end of the financial year there is a legitimate hope that if there be a deficit it will be but small, and that in this respect the hospital will compare most favourably with similar institutions. Consequently there is place for further enterprise. The foundation of a "clinic" on the lines of those started in some of the leading London hospitals, the building of a large and suitable nurses' home, the enlargement of the hospital by the addition of one or two units, and, lastly, the erection in connexion with the main hospital of a well equipped "pay" or "private" hospital for the middle classes. At present we have several excellent and well managed private hospitals, run by former nursing sisters; the charges are not exorbitant for the well-to-do and rich, but for the poorer middle class the minimum charge which it is found necessary to make to ensure a profit is prohibitive; this large and deserving portion of the community are not catered for; they can afford a moderate weekly sum towards their maintenance in hospital and a moderate fee for professional attendance, but they cannot afford a weekly sum that pays the proprietor of a private nursing home nor a fee that pays a medical attendant and a consultant or operator, and they refuse charity. One large institution could be run on more economical lines than several smaller independent ones, and the conditions would be more uniform. This project finds favour with many of the profession. The new plans of the Leeds Medical School (vide British Medical Journal of January 7th) have also received very favourable comment.

With regard to the university there is also much interest and debate; no doubt the arts, science and other faculties, will press their claims. In the faculty of medicine, which is by far the largest in the university, advances have in the last few years been made in the departments of anatomy, physiology, and pathology; the lectureship in public health has recently been raised to a professorship; a department of dentistry, with powers to confer a diploma, is now in full swing; and midwifery and gynaecology have now separate professors; in medicine and surgery no change has been effected for years; a lectureship in pharmacology is felt to have the first claim; but although no doubt evidence can be brought that the subjects for the half and third examinations are widening and require support for new effort, yet the final subjects will have either to assert their importance and their far-reaching influence in the light of modern science, or else sink into a merely technical training. We have six teachers in physiology, and but two—both part-time—in medicine, including acute infectious diseases, constitutional diseases, heart, lung, urinary, digestive, and blood diseases, neurology, psychiatry, dermatology, tubercle, and much of syphilis, etc. Surely this is stultifying the study of these subjects. Medical education and study may roughly be divided into three degrees or grades—that of the general practitioner, that of the specialist, and that of the research worker; any one of them requires the greatest brains we can give; it is a question of direction of study, not of ability. In the final subjects the standard of the first in Belfast, as in most medical schools in Great Britain, is high, and leaves nothing to be desired, but practically no effort has been made by the university to provide post-graduate work in the final subjects, in specialist's training, and, most important of all, in research work. The Royal Commission on University Education in London in 1913 found the same fault—the schools did not encourage research; the clinical teacher should be himself engaged in the discovery of fresh truths and should be at the growing point of knowledge. This finding was endorsed by the University Grants Committee in 1921 (page 11 of their report). In the report of the Development Committee of the Queen's University of Belfast (1919) no recommendation, except a slight increase in salaries, was made with regard to these final subjects. A department of medical research or experimental medicine was recommended, but in a half-hearted manner, without detail and with an altogether inadequate grant.

A strong hope is now entertained that with the aid of this large benefaction there will be a beginning in endowing scientific research in the final subjects and an earnest effort

made to enable clinical teachers to be at the growing point of knowledge. Confining attention for the moment to the domain of medicine, it may be said that lectureships with opportunities of research in neurology, psychiatry, metabolism, cardiology, dermatology, experimental psychology, tuberculosis, applied bacteriology and immunology, haematology, and syphilology, would prove generally valuable additions to the strength of the medical faculty, would promote research amongst those who are faced by the problems of the bedside, and would form a school for post-graduate instruction, and so be a valuable asset to the profession in Ulster. Great advances have no doubt been made by physiologists, anatomists, and pathologists, but the most valuable discoveries have been due to the work of those who had to face the realities of disease and daily receive the stimulus of direct contact with patients. Lister, and the pioneers of abdominal and brain surgery, and in the study of endocrinology, all received this double training and experience.

The senate of the university has recognized the importance of the medical school rising to the latest standards, and lately appointed a special committee to consider the enlargement and development of the medical school.

Death of a Belfast Philanthropist.

The death of Mr. Henry Musgrave, D.L., O.B.E., in the early days of this year removed a well known and much respected and beloved philanthropist and public benefactor; he was the last of a large family of brothers, and the Musgrave Chair of Pathology in the Queen's University of Belfast, the Musgrave Laboratories, and the Henry Musgrave Chair of the Russian Language and Literature—lately by consent of the founder devoted to Spanish—are but a few of the standing evidences of the interest of the family in education. His will continues his benefactions; £47,000 is left to the Queen's University, of which £20,000 is to be devoted to research scholarships, £20,000 to general purposes, and £7,000 to a readership in physics; £50,000 is left to the Royal Victoria Hospital, Belfast, and this institution is also residuary legatee; £20,000 is bequeathed to erection of four national schools; £10,000 to each of the two children's hospitals; £1,000 to the Samaritan Hospital; £5,000 to the Society for providing Nurses for the Sick Poor; £2,000 to the County Infirmary, Lisburn—his native town; £2,000 to the Royal Medical Benevolent Fund Society of Ireland; £2,000 to the Belfast Charitable Institution; £1,000 to the Belfast Maternity Hospital; £1,000 to the Stewart Institution for Imbecile Children and Hospital for Mental Diseases, Dublin; £1,000 to the Ulster Hospital for Diseases of the Skin; £1,000 to the Benn Eye, Ear, and Throat Hospital; £1,000 to the Cripples' Institute, Belfast; and many other sums to various Presbyterian institutions, of which denomination he was a devoted member. His pictures he bequeathed to the Belfast Municipal Art Gallery, his library to the University, and his residence, Drumglass House, and grounds as a public park. He left also several private legacies.

India.

Indigenous Medicine in India.

The Ayurvedic and Unani systems of medicine are still widely popular in the United Provinces, and the policy of the Government is to help in the extension to the poor of all kinds of medical relief, including the indigenous systems of medicine. For the encouragement of the latter the United Provinces Government has included a sum of Rs.25,000 in the current year's budget. The step was in part experimental, and the Government has not yet come to a final decision as to the best methods of affording financial assistance. It is, however, inclined to the opinion that the following methods are likely to be the most fruitful: (1) To give grants to local bodies to establish travelling or stationary Ayurvedic or Unani dispensaries. (2) To give grants to existing Ayurvedic or Unani dispensaries provided that they are controlled by influential managing committees. (3) To give grants to existing institutions for the training of vaids and hakims subject to the same proviso. The question of the management of Ayurvedic and Unani dispensaries maintained by local bodies is not free from difficulty. The ordinary medical staff of the district will not be available for the purpose, and the Government is of opinion that supervision will be best exercised through health committees of the local bodies concerned. No definite rule is laid down with regard to grants to private institutions, but before a grant is made the Government will require proof that the managing committee is influential and that the control exercised is adequate. The grants to local bodies have been allotted in most cases on the principle of giving three-fourths of the amount required for the year for the maintenance of the dispensaries which the local bodies propose to establish, but grants will not actually be made unless the local bodies agree to provide one-fourth of the actual expense. In future years the Government will insist on local bodies bearing a more substantial portion of the burden. In addition to Rs.25,000 distributed to various centres a sum of Rs.50,000, non-recurring, has also been sanctioned for an Ayurvedic college established at Hardwar.

The Housing Question in India.

The acuteness of the housing question in Great Britain and other lately belligerent countries has been reflected in India. Indeed, in that country the problem carries a peculiar complication of its own in the failure of the cantonment bungalow to respond to modern requirements of comfort, in contrast to the increasingly high standard obtaining at home. In the ordinary cantonment bungalow to-day exactly the same amenities are provided as were available to the officer and his wife in the Mutiny days, with the exception of those bungalows in which electric light and fans have been established. White-washed walls, thatched or mud roofs and ceilings intersected by rough-hewn wooden beams, are as much in evidence in 1922 as in 1857. The rise in the prices of materials and labour has made the landlord more reluctant than ever to pay much attention to repairs, and the continual change of tenancy, owing to the exigencies of war conditions, has added to that reluctance for obvious reasons. The lack of accommodation, moreover, has had the effect of raising rents and in causing officers to search for dwelling places far from the scene of their work. The Government has, however, now taken the matter up, and is proposing to acquire certain mess houses and to build, either in the mess compound or in the immediate neighbourhood, quarters for bachelors, and thus to release houses for the use of married officers and their families. To meet the difficulties of the situation a further innovation is being introduced in the shape of the erection of hostels for married families. The first of these hostels is shortly being opened at Lahore, where this problem has long been especially acute, and others will follow in stations where the circumstances warrant their erection.

Indian Red Cross Society.

The Indian Red Cross Society was constituted in 1920 to carry out the administration of the funds and property of the Joint War Committee of the Indian Branch of the British Red Cross Society and the Order of St. John of Jerusalem. The foundation of the society was largely due to the efforts of Sir Claude H. Hill, who retired from the Indian Civil Service in 1920 and is now Secretary-General of the League of Red Cross Societies at Geneva. The objects of the Indian society include not only the administration of gifts received from the public for medical and other aid to the sick and wounded of the Forces, either on the active list or demobilized, but also for the care of sufferers from tuberculosis, for child welfare, for comforts for hospitals and other institutions, assistance to the different branches of nursing and welfare work in India, and home service ambulance work. Dr. D. H. Mehta, of Baroda, has published, under the title of *World's Welfare*, an interesting account of the foundation and development of the Indian Red Cross Society, its relations with the International League of Red Cross Societies, and its programme of work in India for the future.

Plague in India.

During the later part of 1921 the number of cases of plague in India rose gradually from 366 notified for the week ending July 23rd, to 1,403 notified during the week ending October 8th. From that date the number of cases slowly declined, and for the week ending November 19th, the last week for which figures are available, the number notified was 1,199. The mortality seems to have been high; for the week ending October 8th, for instance, of the 1,403 cases reported, 1,158 were fatal, while in the week ending November 19th, of the 1,199 cases reported, 869 were fatal.

Correspondence.

TREATMENT OF CARCINOMA OF THE CERVIX.

SIR,—In 1905, at the Leicester meeting of the British Medical Association, Wertheim brought to the notice of British gynaecological surgeons the operation of abdominal panhysterectomy for carcinoma of the cervix devised by himself and known by his name. I performed my first operation in the late summer of that year, and have performed it as the routine operation ever since. I very soon realized its difficulties, and that only constant practice and experience would enable me to perform it with adequate dexterity, and would lead to the measure of success the operation itself merited. I think this will be the admission of every surgeon who has begun at the beginning and perseveringly followed the operation through. For instance, in point of time alone my first attempts used to last round about two hours; my average time now is between fifty and sixty minutes; nor do I think that in any but quite exceptional cases the operation can be completed in much less time than this.

Again, in details of technique and little things that matter in a difficult operation experience only has preceded improvement. In 1913 I read a paper before the Gynaecological Section of the Royal Society of Medicine advocating a certain technique and a modification of the operation involving crushing clamps and the cautery in the treatment of the parametrium and vagina in place of cutting and ligaturing. This is the operation I have invariably practised during the past ten years. In the *British Journal of Surgery* (vol. ii, No. 5, 1914) I published an account of the operation and of the technique I employ, and with it particulars of the first 18 cases operated on by this method (from July, 1912, to April, 1914), with 17 recoveries and one death, a mortality of 5.5 per cent., practically that of vaginal hysterectomy. Of course this is too small a number on which to estimate the primary mortality, but it is sufficient to establish the reliability and efficiency of the operation. Then came the war and with it a blank as far as reliable records are concerned. Throughout this time I was operating by this method, but I was only able to attend the hospital and do some of the major operations, and records and notes of cases were either not kept at all or are valueless for statistical purposes. Since midsummer, 1919, I have records which I hope to collect and publish later.

As regards operability rate, I regret I have no figures. This must vary with the judgement of different surgeons. My practice is the following: Every case is examined under an anaesthetic some days before operation to determine as far as possible whether the case is operable or not, to remove a portion for microscopical examination, and to curette away all the soft growth and apply the actual cautery to the base of the ulcer. If the case is manifestly inoperable, nothing further is done from a radical point of view. In any case where the least doubt exists the patient is prepared for operation, the abdomen is opened, and the decision is taken then. Any case which offers the smallest probability of satisfactory removal is tackled, and for this reason, that here, as elsewhere, in dealing with malignant disease, surprisingly good results may follow in apparently hopeless cases. That is my argument against picking and choosing in dealing with malignant disease anywhere. The result is inevitably fatal if the case is refused operation, whereas sometimes a prolonged freedom from recurrence is obtained in a case in which every circumstance appeared to forbid it. Of course, the surgeon who operates with one eye on statistics will obtain a better average in a series of cases by picking and choosing.

The two real dangers of the operation are shock and sepsis. I am glad to be able to state that by the technique and method I employ I have abolished the latter. I no longer see sepsis, though it occurred with considerable frequency in my earliest attempts. Briefly, the method is to curette away all the soft growth just before the operation and apply the actual cautery to the base of the ulcer, to dry out the vagina thoroughly and paint it with iodine in spirit, and to plug the cauterized cavity of the ulcer and the vagina with sterilized gauze, which is left in position till just before the vagina is cut across; to crush the parametrium at the pelvic wall and the vagina with powerful crushing clamps and cauterize them, and to leave the vagina open. Only four ligatures are used in the operation to secure the ovarian and uterine arteries.—I am, etc.,

Portsmouth, Jan. 16th. CHARLES P. CHILDE, B.A., F.R.C.S.

SIR,—It is surely incumbent on those who essay to criticize the results of Wertheim's operation to realize that they should do so with some sense of accuracy and responsibility.

Both Dr. Spencer and Mr. McCann state that the mortality of the operation is about 20 per cent. Do they refer to the mortality of the operation as practised by experts seven or more years ago, or to the mortality of the operation as practised by experts to-day? If they refer to the past, then their letters have no point, for it is with the present in this matter that surgery is concerned; while, if they refer to the present, then they have not taken the trouble, before embarking on criticism, to read Victor Bonney's and Fletcher Shaw's papers with that care which ordinary courtesy, let alone a regard for scientific accuracy, demands.

Mr. Victor Bonney in his paper gives the mortality for the first 100 Wertheim's operations that he performed as 20 per cent., the last operation of the series being performed in July, 1915—that is, six and a half years ago. Since then Mr. Bonney and I have performed the operation a large number of times with an ever-diminishing mortality. Mr. Bonney in his paper has set out this diminishment by means of a table so large and conspicuous that it passes my understanding how Dr. Spencer and Mr. McCann can have failed to see it. In that table it is shown that the operative mortality for the last 200 operations jointly performed by me and my colleague was 13.5 per cent., for the last 100 jointly performed 9 per cent., and for the last 50 jointly performed 6 per cent.

Mr. Fletcher Shaw, whilst giving his mortality as 19.1 per cent. for his series of 89 operations, expressly states that if he deducts the cases performed in 1911–12 the percentage mortality for the remainder is much less than this; but he might as well have spared himself the trouble of making the statement for all the notice that Dr. Spencer and Mr. McCann take of it. The humorous thing is that Mr. McCann in his letter first states that the mortality is 20 per cent. and then two paragraphs further down informs us that he has operated on 100 cases with 6 deaths. Why make the first statement when the second flatly contradicts it? He objects to an "operability rate," but without it no just comparison between different surgeons' results for the purpose of estimating the value of the operation is possible. The point that really matters is what is the total number of patients saved per 100 first applying for relief? His suggestion that a surgeon might perform rash and hazardous operations to maintain a high "operability rate" seems to me unworthy.

I again reiterate what I said in my first letter—that figures concerning the operation are of no value unless founded on a long series of cases dealt with on a basis of three, five, or seven years' freedom from recurrence, and Dr. Spencer and Mr. McCann would be best employed producing such figures of their own.—I am, etc.,

London, W., Jan. 16th. COMYNS BERKELEY.

SIR,—Mr. Bonney's interesting paper upon the results of the radical operation for carcinoma of the cervix (BRITISH MEDICAL JOURNAL, December 31st, 1921, p. 1103) is extremely valuable, but, I venture to think, somewhat incomplete in its statistics; answers to the following questions would add materially to its interest.

Out of his 160 cases 100 were submitted to radical operation. How many of the other 60 were found to be "absolutely untouchable" by operation? What was the mortality? How long did the patient live after the operation? How much of that time was spent in hospital, convalescent home, and infirmary? And to what extent was the patient incapacitated from carrying on her daily work as a result of the operation?

Of the 100 cases, how many would come under the category of "riding for a fall"? What was the mortality, the incidence of recurrence, the interval between the operation and such recurrence, and the length of life from the date of operation?

Mr. Bonney's concluding remarks upon the use of radium in carcinoma are not so valuable as the rest of his paper, for the comparison of radium with a red-hot poker is hardly worthy of him. It is not necessary to remind Mr. Bonney that, for the moment, the discussion ranges round the com-

parative merits of operation or radium in the treatment of *inoperable* cancer of the cervix; that the universal opinion abroad is in favour of radium; and that up to now what evidence we have from English surgeons supports that view.—I am, etc.,

London, W., Jan. 10th. SIDNEY FORSDIKE.

THE IRRIGATION TREATMENT OF GONORRHOEA.

SIR,—Mr. Howard English's case of acute arthritis following the irrigation treatment of acute gonorrhoea, and also Mr. Russ's reference to this method of treatment during the war, as reported in the BRITISH MEDICAL JOURNAL for January 14th, once more raise the question of the present position of the treatment of gonorrhoea by the irrigation method. As one who was responsible for introducing the method into St. Peter's Hospital many years ago, and so to some extent into this country, perhaps I may be allowed to make a few remarks thereon.

Like almost any form of treatment of an acute infection in such a delicate and vulnerable situation as the male urethra the details connected with its application are of paramount importance. One would like to have had more details of Mr. English's case, but apparently only the anterior urethra was affected and treated as the discharge was only forty-eight hours old. Coincidences are too frequent in the treatment of disease for the report of one case to be of any value. During the war I never ceased warning my friends who happened to be in the R.A.M.C. that the primitive and indiscriminate way in which the irrigation treatment was carried out would certainly bring a valuable form of treatment into disrepute. The outstanding offence was the irrigation into the bladder in a case of acute posterior urethral infection, often with the man in the upright position and without a local anaesthetic. How could a man be saved from a prostatitis or an epididymitis under such circumstances? I can safely say that not for twenty years have I irrigated at all into the bladder in a case of acute recent posterior urethritis. The acuteness of the attack must be allowed to subside thoroughly before commencing vesical irrigations, and then they should only be done under a local anaesthetic with the patient lying down and with a low head pressure of fluid. Between such a condition and a very mild inflammation when vesical irrigations may be undertaken at once many grades are met with, and this is where experience is of so much value in treatment. When in doubt it is better to trust to medical treatment for perhaps a few weeks before beginning irrigations in a case of posterior urethritis, especially in a first attack.

In quite a different category are anterior urethral infections where the disease has not spread to the posterior portion. But even here a highly acute condition should receive medical treatment for a while before commencing local treatment. In all moderate and mild cases irrigations of weak permanganate, 1 in 8,000, should be undertaken at once and a strenuous effort made to prevent the spread of the disease. Success will attend the treatment in a large proportion of the cases. Should the disease spread to the posterior urethra, and it is recognized very early, vesical irrigations may be undertaken, but they should be at once discontinued if no improvement takes place. My treatment here varies from the French school who irrigate into the bladder in every case of even purely anterior infection. In my practice it is therefore necessary to submit every patient at every visit to the diagnostic test of an anterior wash-out with 2 or 3 pints of a warm solution of mercury oxycyanide 1 in 6,000, or with boric lotion. I should feel quite at sea in the treatment of urethral infections unless this was done on every occasion. The test requires great care and some experience if you want to make quite sure that none of the fluid is going to be forced through the membranous urethra, carrying perhaps some discharge with it and so spoil the urine for diagnostic purposes. A bright urine free from flakes excludes posterior urethritis. A little mucus, or the early separation of a mucous cloud, is suspicious of a commencing posterior infection. Then is the time to try vesical irrigations. It is not possible in a short note like this to make any useful contribution to such a complex subject as the treatment of gonorrhoea, but I hope that the foregoing remarks will help to put the irrigation treatment in its place as a valuable friend which may be easily abused.—I am, etc.,

London, W., Jan. 14th. W. WYNDHAM POWELL, F.R.C.S.

PROBLEMS INVOLVED IN THE CONGRESS OF THE SEXES.

SIR,—All gynaecologists will welcome the interest evinced in the physiology of their subject by so distinguished an anatomist as Professor Arthur Thomson.

It has always been a grievance that most anatomists have ignored the anatomy of the female genitalia in their teaching and textbooks—notable exceptions being Sir Arthur Keith and Professor Wood Jones—and that physiologists have done the same in regard to the sex-functions. I do not know, however, how far our special science has suffered thereby, for we have ourselves now worked out many of the problems, apparently without the knowledge of the writers of anatomical and physiological textbooks. I hope, therefore, that when some general physiologist replies with an address on gynaecological anatomy, it will be more convincing than that of Professor Thomson, even though well lubricated with *oleum nocturnum*.

Professor Thomson, in discussing the endometrial glands, makes the following statement: "When we come to inquire what the functions of these glands may be, we are plunged at once into the realms of uncertainty. The generally accepted views are far from satisfying." Then he proceeds to discuss one or two long-forgotten ideas. Nowhere does he give any indication of having studied modern work, although he seems grieved that Marshall and Young have failed to satisfy his curiosity.

In regard to these glands, Professor Thomson wants to know, "What, then, is their function? Are they secreting or absorbent? *In truth the views on the subject are very vague*" (italics mine). Whose views? I do not think that any gynaecologist has any doubt on the matter, nor do I suppose any physiologist would have much difficulty in deciding between secretion and absorption. Professor Thomson also makes some curious remarks about "gland inclusions." He states, "The use of this expression is convenient, for it commits us to no definite view or to their nature." The expression has a very definite meaning to me.

Professor Thomson appears to have been influenced by the work of one Beiling (1906), who denies that the endometrial glands have a secretory function. Moreover, he states that the uterine glands fail to react to mucin tests. I would like Professor Thomson to test the accuracy of this last statement himself.

I refrain from further criticism. My object in writing this letter is to prevent, if I can, an impression getting abroad—as would be inevitable if Professor Thomson's paper were taken seriously—that gynaecological anatomy and physiology are vague and mediaeval.—I am, etc.,

Liverpool, Jan. 12th. W. BLAIR BELL.

SIR,—In view of the great interest now being taken in the whole subject of birth control, Professor Arthur Thomson's address to the Oxford Medical Society is very opportune. If the medical profession are to be in a position to give the best advice to their patients on the practical aspect of conception control—and the public are now looking to the profession to do this—much more serious scientific study of the subject is necessary. Hitherto it has been sadly neglected, and Professor Thomson is all the more to be congratulated, therefore, for having taken it up. I sincerely hope that he will continue his investigations.

The gist of his address is to suggest that sex intercourse has a distinctly beneficial effect upon the female through absorption of the male ejaculate, and that this absorption takes place through the glands of the uterine mucosa. He concludes by suggesting that the use of contraceptives may be injurious "by depriving the female of certain secretions which may exercise a far-reaching influence on her economy." This raises a very important practical point. Professor Thomson's final suggestion is altogether too vague to be left at that, and I hope that he or others will follow it up. There are different forms of contraceptives and Professor Thomson does not distinguish between them. Not all contraceptive devices prevent the semen from entering the uterus. Thus, quinine pessaries, which are very widely used, aim at nothing more than destroying the vitality of the spermatozoa. It does not follow that the active ingredient, quinine, would have any deleterious action upon the secondary effect of the seminal fluid to which Professor Thomson draws attention. Moreover, the use of such methods as the rubber cap, the tampon, or the sponge, whilst prevent-

ing the semen from entering the uterus, do not prevent absorption through the mucous membrane of the vagina. It is quite possible that as much, or more, absorption takes place there as in the uterus. Assuming, then, that sex intercourse is beneficial to the female as well as to the male, it seems reasonable to suggest that it is better to have intercourse in marriage, even if the full advantage of it is not obtained, than to go without it altogether, or to fall back upon *coitus interruptus*. For those are the only alternatives to contraceptives open to those who feel, for various reasons, that they ought not to have more children. Better half a loaf than no bread.

But however this may be, if we look at the matter from the point of view of the poor overburdened mother with more mouths to feed already than she knows how to provide for, I think we may assert without fear of contradiction that she will gladly forego the benefit of coitus for herself so long as she is able to escape from the evil of too frequent conception and excessive maternity, and at the same time be able to satisfy her husband.—I am, etc.,

Leicester, Jan. 15th. C. KILLICK MILLARD.

ENCEPHALITIS LETHARGICA AND MENTAL DEFICIENCY.

SIR,—In a paper in the current number of the *Journal of Mental Science* Dr. G. A. Auden refers to the "extraordinary moral changes which not infrequently follow an attack of encephalitis lethargica." He states that such children often prove a nuisance at school and at home, but that they cannot be dealt with under the Mental Deficiency Act.

May I say that in Scotland such cases *are* dealt with under the Mental Deficiency Act? I have two such cases in this institution, and Dr. Clarkson informs me that he has several at Larbert. No doubt these cases are not just the class of defectives for which the Act was intended, but some of them really require institution treatment, and it is obviously most desirable that they should be treated in a certified institution for mentally defective children rather than in an asylum or mental hospital for adult patients.

My two cases are quite unfit to be at home, but are attending the institution school. They are both certified by outside doctors as "moral imbeciles" on account of vicious propensities apparently resulting from their illness. I think it would be better to certify such cases, however, as "feeble-minded," even although their defect is more moral than intellectual. Their aberrant conduct is a symptom of mental defect acquired "at an early age," which renders them "incapable of receiving proper benefit from the instruction in ordinary schools." This brings them within the scope of the definition given in the Act of "feeble-minded persons," with the exception that in the Act the word "permanently" is used —"appear to be permanently incapable," etc. It does not at present appear to be possible to say whether or not the defect is of a permanent nature, but it is so obviously desirable that cases of the kind who may be likely to benefit by institution training, and who may be capable of attending school in an institution, though not an ordinary school, should be sent to a certified institution for children rather than to any other existing kind of institution or hospital, that I do not think medical men need hesitate to certify such cases under the Act. This is desirable, not only from the point of view of the child's interest, but as the best means of gaining knowledge regarding the prognosis in such cases when placed in favourable educational surroundings.—I am, etc.,

W. B. DRUMMOND,
Medical Superintendent.

Baldovan Institution for the Treatment and Education of the Feeble-minded, Dundee, Jan. 10th.

HOSPITAL POLICY.

SIR,—Thanks to Mr. Bishop Harman's effective co-operation, we now know that the letter (BRITISH MEDICAL JOURNAL, December 24th, 1921, p. 1095) signed "Chairman of the Hospitals Committee" did not contain an authoritative judgement of this Committee, but only certain propositions that had had the good fortune to secure Mr. Harman's personal approval. It was in the hope of banishing any doubt on this point that my letter (BRITISH MEDICAL JOURNAL, January 7th, p. 35) was written. Whether the propositions were original or borrowed is surely immaterial. The essential point is that the letter, though signed by the "Chairman," was not an official communication authorized by the Committee.

I confess that in the swift and commanding tones of Mr. Harman's sentences I had not recognized the resolution accepted at Newcastle, and I venture to think that if the views of the Association are to be publicly announced, they had better be announced in the terms formally adopted rather than in the free translation effected by a challenging individual notice. Further, unless my memory deceives me, the resolution in question has no official authority or status, for it was taken on an issue on which the representatives had not been instructed by their constituencies. Perhaps I ought to have made a further speech. Mr. Harman seems to reproach my silence, and his own example, I gratefully allow, has been consistently opposed to such abstinence. In any event, not even the British Medical Association has authority to change the meanings of words, and current controversies show plainly that laymen, I fancy without exception, continue to use the term "voluntary hospital" in the sense described in my letter and recognized by Mr. Harman as based upon an accurate historical statement. To take an old-established word and to try to impose upon it a new definition is, to put the position mildly, a confusing and arbitrary procedure, and the promoters of such a policy cannot escape the reproach that they are posing in the stolen clothing of their predecessors. If the thing is to be changed, let the name also be changed.

With his natural generosity Mr. Harman will, I am sure, forgive my failure to trace in his letter the dignified inspiration which he now describes as its true source. And he will be all the more ready to do this when in reference to my own letter (a much more recent document) he recognizes that, not, as he suggests, a want of courage, but a desire for accuracy, prevented me from describing as one of the features of the "voluntary hospital" a system of "gratuitous nursing." My concern was with things as they are, and had I described a non-existent condition I should have failed to merit the compliment for historical accuracy which Mr. Harman has so graciously placed on record. This slight slip on his part will be the more readily excused seeing that but for it the readers of the JOURNAL might never have had the advantage of his penetrating though somewhat irrelevant observations on the respective merits of the three-legged and the four-legged table, and might never have realized that these strictly utilitarian and prosaic supports may be yoked to the service of high imaginative effort.

I will make no attempt to rival Mr. Harman in his forecast of the fate either of the "poor" or of the hospitals. Time, it is true, plays strange pranks with words, and it may be that in some distant future our hospitals will boast at one and the same time that they are "voluntary" and that they are *not* supported by voluntary contributions. Then, indeed, Mr. Harman will appear to be justified and will enjoy a posthumous fame as one of the earliest preachers of the doctrine that in a "voluntary hospital system" neither voluntary services (save those of management) nor voluntary contributions merit an essential and abiding place. The one risk is that there may appear some still more radical advocate, who will urge (why not?) that managers, equally with doctors, should be paid for their services, and in such circumstances it is to be feared that history will label the Bishop Harman of the twentieth century a mere Laodicean opportunist and a stoker of feeble and ineffectual fires.—I am, etc.,

London, W., Jan. 16th. C. O. HAWTHORNE.

SIR,—Mr. Harman's continued efforts to belittle the Cave verdict on the Leicester motion will deceive no one. Clearly the Chairman of the Council and the Representative Body did not deliberately and publicly snub the Cave Committee out of mere love of mischief. Ill judged as was that action, it was forced upon them, having adopted the Leicester motion, because it was obvious that the latter was wholly incompatible with the Cave report. No one, as alleged by Mr. Harman, has ever suggested anything so absurd as that paragraph 50 was "the quintessence" of that publication. It was, however, the particular portion thereof which dealt emphatically and authoritatively with the matter in debate, though of course many more considerable problems are involved in the study of hospital maintenance and finance, and was in fact penned, no doubt with full sense of responsibility, after twenty-eight meetings and examination of ninety-three expert witnesses. Nothing apparently would convince Mr. Harman but a promiscuous distribution of damnation of the Leicester motion over the whole document.

Mr. Harman has never replied to my inquiry: How many staffs of hospitals have so far commended this motion to their committees, and what happened if they did? Personally I believe that for all practical purposes the Leicester proposal is as dead as Queen Anne. We are asked to demand that an unnamed portion, which if we may judge by precedent will start at 10 per cent. and rise rapidly to 25 per cent., of a large number of payments collected by laymen from laymen for exclusively lay purposes—namely, hospital maintenance—shall be appropriated by the medical staff, and already the plea of a fund for altruistic purposes is abandoned. The precarious profits of this adventure are frankly designated by Mr. Harman "remuneration," and avowedly for the staff themselves. Whether payments in kind are to be included with those in cash is not specified, but clearly, since they equally contribute towards maintenance, our claim upon such is equally justified. Therefore we may visualize a weekly distribution of eggs, butter and garden produce by the still honorary committee among the sometime honorary medical officers. Now the action of the Representative Body in endorsing such a claim as the Leicester motion is strictly comparable to their action in December, 1912. Both exhibitions of folly, as I consider it, would have been avoided by first consulting a few competent laymen. I offer to the second the same strenuous opposition that I did to the first, and I hope, and indeed believe, with more success. Otherwise the result will be as before, we shall be, figuratively, kicked downstairs again.

I have, however, but little fear of such catastrophe. The Leicester motion has been utterly rejected by the staffs of Scottish hospitals; even in London the change in opinion with regard to it is already quite remarkable, and its final extinction in the county hospitals is, I believe, assured. It is a pity that it was ever invented, as it is calculated seriously to prejudice the profession in the eyes of the public, whose opinion upon it is, without doubt, accurately represented by paragraph 50 of the Cave report.—I am, etc.,

Chichester, Jan. 14th. G. C. GARRATT.

"STIMULANTS."

SIR,—Dr. Campbell's letter (BRITISH MEDICAL JOURNAL, December 24th, 1921, p. 1096), in reply to my criticism of his classification of alcohol as a "stimulant," should not be allowed to pass unanswered. The question at issue is whether alcohol is rightly regarded as a "stimulant" or as a "narcotic." Dr. Campbell is obliged to admit that it may act as a narcotic, but he declares it to be a "glaring fact—that under certain conditions alcoholic drinks are stimulating." The review issued by the Advisory Committee of the Central Control Board (Liquor Traffic), to which I alluded in my previous letter, appears to embody the clearest and most dispassionate study hitherto made of the action of alcohol; and the names of the members of the Committee are sufficient guarantee that its conclusions are of scientific value. I notice that Dr. Campbell makes no reference at all to the findings of this Committee, which are in direct conflict with his views.

Dr. Campbell asks whether I seriously maintain that in states of exhaustion alcohol may not have a "temporary reviving—that is, stimulating—effect," and instances the case of "an aged subject slowly and painfully recovering from a severe attack of influenza," and that of a man who habitually consumes two bottles of whisky a day, and has experienced several hours of unaccustomed abstinence. The proper reply to this question depends entirely upon what we mean by the terms "stimulant" or "stimulating." There is no doubt that alcohol commonly produces a sense of well-being, and in the words of the Advisory Committee it is this effect "which perhaps more than any other is the secret of its charm, its wellnigh universal attraction for the human race." This effect is primarily mental, and is shown to be due to "a blunting of the sensibility to the small aches and pains and a thousand hardly distinguishable sense-impressions which, except to those in perfect health, contribute to tip the balance of bodily feeling-tone to the negative or unpleasant side." No doubt the aged subject of influenza might feel his painful recovery lightened for a brief period by the effect of the glass of champagne, but I maintain that it is not true in the scientific sense to say that this is due to a "stimulating" action of the champagne. Is it not due to its blunting action on the highest centres, so that for a brief period the patient is not so conscious of his aches and pains? So given the use of alcohol may be properly justified, but we should acknowledge its action to be that of a sedative, not a stimulant.

As regards the two-bottles-of-whisky man, here the confusion of terms is more obvious. The two-bottle man would undoubtedly be much cheered by the advent of another bottle after an unaccustomed spell of abstention; but surely it is not true to say that this sense of comfort is due to a "stimulant" action of alcohol. He craves for the comforting sedative effect of his favourite narcotic, exactly as the opium-eater does if deprived of opium.

In my time as a medical student we used to be taught that alcohol had a brief stimulant action, but even this is denied by the latest research. The true explanation of the apparent brief stimulation, on the mental side, has already been stated. The quickening of the heart beat that is common after a moderate dose of alcohol is also shown to be a depressant rather than a stimulant action of the drug. To quote the Committee: "The acceleration of pulse appears to be due to depression in degree of the reflex cardio-inhibitory tone which normally restrains the heart beat." "When it (that is, alcohol) appears to promote recovery from fainting, it probably acts simply by virtue of its irritant action on the mucous membrane of the mouth and throat. . . . Its use in these circumstances is therefore comparable with that of smelling salts." "In this direction, as in others, the popular idea that it is a 'stimulant' proves on examination to be scientifically untenable."

Is Dr. Campbell prepared to prove that the Advisory Committee has erred in its conclusions?—I am, etc.,

Alderley Edge, Cheshire, Jan. 3rd. E. WEATHERHEAD.

TREATMENT OF TUBERCULOSIS WITH COLLOID CALCIUM.

SIR,—The results obtained by Dr. Prest, as published in your issue of January 14th, should stimulate others to try this method of treatment in conjunction with other therapeutic measures. One knows that nature will utilize calcium in her processes of repair if circumstances are favourable, but how can we explain the many failures of the past when not only calcium salts have been given by mouth but cow's milk, which contains an abundant supply of that mineral, is equally imbibed with faith and hope?

Calcium is present in the body in two forms—(1) fixed, (2) ionized—and it is in the latter state that calcium is "rushed up to the front" in times of emergency, the former remaining as a reserve "at the base" to be drawn upon when the mobile variety is exhausted. The calcium in cow's milk is in a non-ionized form.

We believe that the ductless glands are the regulators of this traffic, and can be divided into two main groups—(1) the calcium excretors, consisting of the genital glands and posterior pituitary; (2) calcium retainers, such as thymus, anterior pituitary, thyroid and parathyroid.

Broderick studied caries of the teeth from the point of view that caries was due to a decrease in the alkalinity of the saliva brought about by want of balance in the secretion of the ductless glands. But what brings about this want of balance? One answer is toxaemia.

The late Rupert Farrant examined the condition of the thyroid gland *post mortem* in 700 cases of acute disease, and could group these diseases according to their effect on the thyroid. Among other diseases (acute infections) he found that acute tuberculosis produced an acute or complete degeneration of the thyroid, whilst chronic tuberculosis gave rise to a colloid or chronic degeneration. If these observations are correct, is it not permissible to suggest that the endocrine glands, being poisoned by toxins, are only functioning feebly, and that therefore calcium, even if it can be ionized in the body, is not seized upon by those ductless glands whose work it is to distribute calcium to the scenes of action?

It seems as if Dr. Prest is taking a step in the right direction, in that tuberculous patients are in great need of ionized calcium, and if we can give it to them in a form that they can absorb, the lesion, if not too extensive, might heal, toxin production would be reduced, so that the ductless glands which regulate metabolism would, with renewed activity, build up the tissues, and the antibody mechanism could then assert itself fully.

It goes without saying that the usual treatment by fresh air, feeding up, and exercise, as well as oral hygiene and the psychological side, should not be neglected.

For two reasons I do not enthusiastically advocate the administration of glandular products together with Dr. Prest's form of treatment—first, because I have had no experience of

this form of medication in this particular disease, and secondly, because at present these products are not standardized and one knows so little as to what combinations are likely to be of avail; but I think that it is worth while to try either a single one, such as parathyroid extract, or a pluriglandular combination in conjunction with colloidal calcium. — I am, etc.,

A. D. SYMONS, M.D., M.R.C.S., D.P.H.,
Assistant M.O., City Isolation Hospital and Sanatorium.

Bristol, Jan. 16th.

HELIOTHERAPY AND THE WOLFRAM ARC REACTIONS.

SIR,—After reading Dr. Bernard Hudson's most interesting article on "Mountain climates in health and disease," in your issue of November 5th, 1921, it has occurred to me that the close analogy between his results from heliotherapy and my own from the use of the rays from the wolfram arc, in war service and private practice, might be of some interest.

It has long been established that the wolfram arc gives off an extreme volume of ultra-violet rays, electro-magnetic rays, and it is generally known that the rare metals are radio-active. These facts being acknowledged, there is at once established a comparison with the sun's rays.

The marked analgesic effect of wolfram rays in about one and a half to two minutes on, say, a recently reduced dislocation, a severely sprained ankle, acutely inflamed dental socket, acute frontal neuralgia, or acute lumbago, is a result only to be believed possible by actual demonstration. Many other painful conditions are capable of being relieved in the same way—for example, varicose veins and ulcers and eczema. Dr. Hudson claims similar results from the sun's first reaction, and I believe all who have had an extended use of the wolfram rays will agree that on this point the two reactions are similar.

In regard to pigmentation, here again the results are identical, fair or reddish people reacting much more quickly than dark; the concentrated intensity of the wolfram rays causes reaction much more quickly, anything over one minute's exposure producing pigmentation. In the absorption of adhesions I have had similar results.

Dr. Hudson refers to the general improvement in the patient under heliotherapy; it has frequently been my experience for patients to exclaim voluntarily, after, say, fourteen days' treatment with wolfram rays, how much improved they are in general health.

After using the wolfram rays continuously for four and a half years, with about 30,000 administrations in the N.Z.M.C. and a large number in private practice, my experience has been as follows: (1) The rays are extremely bactericidal; (2) they are markedly analgesic; (3) they produce tissue in the healing of wounds of a character and vitality quite different from ordinary scar tissue—that is, more natural; (4) they have never to my knowledge caused any harm to those treated or to those who apply them properly.—I am, etc.,

EDW. JAS. DECK, M.R.C.S., L.R.C.P.,
Ex-Captain N.Z.M.C.

London, W.1.

PROFESSIONAL SECRECY AND MEDICAL EVIDENCE.

SIR,—Dr. Brend's contribution on this subject in your issue of January 14th is highly interesting, and is written with that lucidity and clarity always so characteristic of his pen. He has laid down the position of English law relating to medical privilege, which I am not disposed to question or dispute; his conclusions, I trow, will nevertheless be considered more academic than just.

Perhaps it is true to say that no body of men are the recipients of such grave and profound confidences as general practitioners of medicine, and I am confident that the general practitioners will not be content to abide by the recent rulings in the courts, but, on the contrary, they will instruct their Divisions to insist upon the Representative Meeting emphatically declaring a very definite and decisive policy on the subject. Indeed, it seems to me, since medicine is becoming so rapidly and increasingly under public control, it is of paramount importance to the successful administration of such State medicine that medical privileges should be maintained.

It is surely obvious that if the public are possessed of any doubts in their minds concerning professional secrecy, the result can only be a disastrous handicap to the doctor in securing an accurate history, and in consequence will seriously militate against the successful detection of disease, as well as efficiency in treatment.

Professional secrecy should be maintained essentially in the interests of the State and the community, access to the treatment of disease being absolutely free and unfettered, and the promotion of justice is not at all likely to be defeated thereby. —I am, etc.,

WALTER ASTEN.

Bournemouth, Jan. 16th.

MIDWIVES AND OPIUM.

SIR,—Referring to the report of the Central Midwives Board and the use of opium by midwives, I should like to state that opium, in reasonable medicinal doses, is not a dangerous drug, and can result in no harm to mother or child when given at a confinement except in a case of severe nephritis, in which case a qualified midwife will send for a doctor, if for no other reason than her own protection.

It is a great mistake to tie up midwives with too many and too stringent rules, as it limits their power of action and their usefulness, and has a decided tendency to turn patients away to "Gamps," of whom we have still a multitude.

I am not aware that midwives use pituitrin, except under a doctor's direction; but if so it seems unwise with their present knowledge, as it is by no means so safe a drug as opium. I have thirty years' experience of the use of opium for horses, cattle, and people of all colours, ages, and conditions, and have never had cause to regret its use where necessary, even in patients with advanced heart disease, or infants. It is still the most valuable drug we possess.—I am, etc.,

ABRAHAM PORTER, M.D., Ph.C.

Northampton, Jan. 8th.

No. 1 CASUALTY CLEARING STATION.

SIR,—The achievement of No. 1 Casualty Clearing Station was probably unique, amongst medical units, in the history of the war. On August 4th, 1914, orders were given to mobilize the "clearing hospital," which was afterwards officially designated No. 1 Casualty Clearing Station. On August 16th it embarked at Southampton under sealed orders for France and proceeded at once towards Mons, where it commenced work during the strenuous times consequent on the famous retreat. The late Colonel F. H. Symonds, R.A.M.C., was the first commanding officer. After having had many locations and vicissitudes throughout the whole period of the war, it finally laboured to keep up with the British advance which began about August 8th, 1918. The casualty clearing station was last under canvas at Escaudoeuvres, near Cambrai, and had the signal honour of moving into Mons and taking charge of the civil hospital on November 14th, 1918, just the day before General Horne made his formal entry into the town. The "Hôpital Civil" had been occupied by the Germans during the war as a Kriegslazarett, and when taken over by the medical officers of the casualty clearing station (seven in number, including the then commanding officer, Lieut.-Colonel E. M. Cowell, R.A.M.C.) it immediately became crowded with starving and (in many cases) diseased men belonging to the British Army who had been prisoners in Germany, and who were not very fit subjects for the epidemic of influenza which was prevalent at that time.—I am, etc.,

S. W. ALLWORTHY.

Belfast, Dec. 27th, 1921.

THE ANTE-NATAL TREATMENT OF CONGENITAL SYPHILIS.

SIR,—I have read with interest Mr. Adams's criticism, in the JOURNAL of January 14th, page 56, of my communication to the British Medical Association at Newcastle on "Ante-natal treatment of congenital syphilis," criticism which I am specially pleased to see, as it is, at least so far as I am aware, the first reference by Mr. Adams to any work of his predecessors in this field. He however has confused the issue. In my communication the discussion was of ante-natal *versus* post-natal treatment of congenital syphilis, and I concluded, from my own work, from that of the French pioneers in the field, and from the more recent work of Mr. Adams himself, that ante-natal treatment gives far and away the best results; a conclusion substantiated by his latest figures. So far as I can gather from Mr. Adams's several communications he always practises ante-natal treatment, and thus merely carries out what I and others have been teaching for years. He makes no mention of post-natal treatment pure and simple.

His answer to my query regarding the time of election for treatment of syphilitic mothers is beside the point. He states his practice but without giving reasons for the faith that is within him. What I desire to know is, when (before pregnancy ensues or during pregnancy) is treatment most efficient so far as the health of the unborn child is concerned? My own work has led me to the view that more certain results, and apparently with greater ease, are obtained by treatment during pregnancy; but my experience is limited, and I asked for records of definite observations in support of or against such a view.—I am, etc.,

Glasgow, W., Jan. 14th. LEONARD FINDLAY.

Obituary.

SIR JOHN KIRK, G.C.M.G., K.C.B., M.D., F.R.S.,

Formerly Consul-General, Zanzibar.

SIR JOHN KIRK, the companion of Livingstone on some of his journeys, died at Sevenoaks on January 15th in his 90th year. He had been ill for a long time.

Sir John Kirk was not only a keen scientific worker but an intrepid explorer, and his life links us with a distant past. He was a son of the manse, and was born at Arbirlot, Forfar, on December 19th, 1832, and as a schoolboy he was fortunate in finding scope for his bent towards natural history, and particularly in botany, which doubtless influenced his later career. He pursued his medical studies in Edinburgh, where he graduated M.D. in 1854. The Crimean war was then in progress, and young Kirk saw active service in Turkey during the campaign, where, with a volunteer party of young Scottish medical men, he rendered help at one of the base hospitals in the Dardanelles. Having tasted this experience of foreign travel and adventure, it is not surprising that he should be attracted to share in African exploration under the great Livingstone. Sir Roderick Murchison, the distinguished president of the Royal Geographical Society, when announcing the choice of staff for the Zambesi expedition in 1858, said: "Dr. Kirk of Edinburgh, an accomplished botanist, zoologist, and physiologist, also accompanies the expedition."

During five years at least he occupied a foremost place in the exploration of the Zambesi region, including especially the tracing of the river Rovama and part of Lake Nyassa. He was at this time Livingstone's chief lieutenant, but there was no question as to who was the leader. Livingstone, himself a medical man, was a personality of outstanding powers and gifts, and it was natural that his work should overshadow the attainments of his colleagues, though he did not belittle them. Whether Kirk of his own initiative would have accomplished the same results without the guidance of his great companion is difficult to say, but there can be no question that Kirk rendered signal service to this expedition.

Little record seems to be available as to his scientific researches, though we find that he, as the naturalist of the party, demonstrated to the Royal Geographical Society in April, 1864, a collection of fossil animal bones. There is no mention of any human remains, but pieces of pottery were found which were regarded as showing the antiquity of man in that region, though the animals were of the same type as those now known. His medical work does not come into prominence, but with Livingstone already experienced in the study and treatment of tropical diseases there was not much scope for Kirk, who was engaged as a naturalist and not as a medical officer. At the same time he was the medical attendant to Mrs. Livingstone in her last illness, and at risk to his own health refused to leave Livingstone when he was attacked by illness at that time.

The next stage in Kirk's career found him at Zanzibar, where he was appointed Government medical officer in 1886. He does not appear to have remained long in this position, for, like Livingstone, he was destined to figure more prominently in administrative work than medical practice. Thus we find him during fifteen years first Assistant-Consul and then Consul-General and Resident of Zanzibar. It was hoped that in this position he would be able materially to help Livingstone in the matter of supplies and communications. The proverbial uncertainty of African trade routes in those days, with the constant menace from the slave-raider, made this difficult. Some misunderstanding with Livingstone ensued, but was happily removed.

At Zanzibar he was the constant adviser and friend of the various explorers who entered Africa from the east coast during his term of office. The political importance of Zanzibar at that period, before the delimitation of spheres of influence between the chief European powers, must be remembered. German competition and intrigue resulted in the assigning to Germany of the great territory to which Zanzibar was the door of entry. In all these negotiations Kirk appears to have acquitted himself with great tact and with a desire to uphold the best interests of his own country and the welfare of the native races of Africa.

That the value of his work was appreciated was shown by the bestowal upon him of decorations and academic honours. He was created a K.C.M.G. in 1881, G.C.M.G. in 1886, and K.C.B. in 1890. In 1882 he received the Patron's medal of the Royal Geographical Society; afterwards he became foreign secretary of the Society, an office he retained until 1910. He was an honorary LL.D.Edin., D.Sc.Cantab., D.C.L.Oxon., and was F.R.S. and F.L.S.; he was an honorary Fellow of the Royal Society of Tropical Medicine and Hygiene, and a corresponding member of the Zoological Society.

When the Brussels Conference was held in 1889 to deal with African affairs, and specially the slave trade, Kirk, as was most fitting, was a British plenipotentiary, and took a share in the inclusion of clauses relating to the African spirit trader, which were inserted at the instance of Great Britain, and have rendered famous the Brussels General Act of 1890.

One more official service was rendered by Kirk when as a British Commissioner he was sent to inquire into serious disturbances in Brass, West Africa, in 1895. His wide experience of African affairs stood him in good stead in this inquiry, and it must have come as a shock to him that in spite of the high ideals of the Brussels Act he was forced to conclude that in the district visited "the last four centuries of contact with Europeans and European trade have degraded rather than elevated or improved the people."

He married in 1867 Helen, daughter of Charles Cooke, and for many years he lived in a peaceful home at Sevenoaks, patient and courteous, a splendid type of an English gentleman. For a considerable time he was practically blind, and the death of Lady Kirk in 1914 was a serious loss to him. He leaves one son and three daughters.

The medical profession may well be proud of two such distinguished representatives as Livingstone and Kirk. Undoubtedly they were largely responsible for laying the foundations of the scientific work, medical and other, which has been a prominent feature of the explorers and administrators of Africa. High ideals are as important as detailed discoveries such as those which have been made with brilliant results by British medical experts of to-day representative of the Tropical Schools, of the Royal Society, of the Government, and of the Missionary Societies. Kirk took his share in blazing the trail which others have followed with infinite devotion and with the loss of valuable lives. There are still many secrets to be unfolded and pests to be conquered in the African continent, and the memory of one of the pioneers, who has died full of age and full of honours, should spur on many a younger worker to take part in this fascinating exploit.

E. MANSEL SYMPSON, M.D.,

Surgeon, Lincoln County Hospital.

THE announcement of the death of Dr. Edward Mansel Sympson, of Lincoln, will be received with great regret by a large circle of friends. He was the only son of the late Mr. Thomas Sympson, surgeon to the Lincoln County Hospital, and was born in 1860. He was educated at Lincoln Grammar School, Shrewsbury School, Gonville and Caius College, Cambridge, and St. Bartholomew's Hospital; there he held the offices of both house-physician and house-surgeon. He graduated M.A., M.B., B.Ch. at Cambridge in 1887, and proceeded M.D. in 1890. Soon after graduation he settled in practice in Lincoln, and became surgeon, first, to the Lincoln General Dispensary, and afterwards to the Lincoln County Hospital. He contributed a number of papers, chiefly on surgical subjects, to the medical journals, and took an active interest in the British Medical Association. He was secretary of the Section of Diseases of Children at the Annual Meeting at Nottingham in 1892, vice-president of the same section at the Annual Meeting in Cheltenham in 1901, and was president of the Midland Branch of the Association in 1906–7.

His hobby was archaeology, for the study of which his native city afforded many opportunities; he wrote a historical and topographical history of Lincoln, contributed the article on Lincolnshire to the *Cambridge County Geographies*, and

was editor of *Memorials of Old Lincolnshire*. He also edited *Lincoln Notes and Queries*, was co-editor of the Associated Architectural Societies' reports and papers, and honorary local secretary of the Society of Antiquaries. He took an active part in the life of Lincoln, was J.P. for the city, had been sheriff, and held a commission as honorary lieutenant-colonel R.A.M.C.(T.F.). He married the daughter of the late Mr. Joseph Knight, a well-known antiquarian and journalist.

THE LATE SIR GERMAN SIMS WOODHEAD.—A service in memory of Sir German Sims Woodhead was held in the Memorial Hall, London, on January 11th. The Rev. Principal W. B. Selbie, of Oxford (formerly minister of the church at Cambridge with which Professor Woodhead was associated), presided, and a large gathering included Sir Thomas Barlow, Sir F. W. Mott, and Mr. McAdam Eccles, as well as representatives of religious and temperance organizations. Sir Thomas Barlow, in a brief address, said that he first met Sims Woodhead forty years ago. He changed very little either in physique or character; at the time of their first association he was somewhat round-shouldered, rather pale, with a serious, thoughtful face and a very engaging manner, which, although he was a man of few words, showed that at the background of his personality there was not only a wide intelligence but a real goodwill to his fellows. He was then in charge of the pathological department of the Children's Hospital in Edinburgh, where his attention was early drawn to the subject of tuberculosis. One branch of this subject—namely, the dissemination of tubercle by cow's milk—was at that time little more than a speculation, and Woodhead subsequently threw a flood of light upon it. From Edinburgh he went to London, and from London to Cambridge, where he spread his abundant energies over many other matters than those relating to his professorship. No labour was too exacting for him, and his counsel and advice were at the disposal of all his junior teachers and assistants. There was no doubt that his health was broken and his life shortened by his unselfish devotion to his teaching duties, and still more by his indefatigable war labours. Sir Thomas Barlow concluded by expressing the opinion that the recognition of Woodhead's work came late; his zeal in temperance reform was perhaps a disability, but he (Sir Thomas) never heard a syllable nor saw a sign which would imply that Woodhead felt that his personal claims had been ignored. Mr. McAdam Eccles added a few words of tribute to "a great man, but one whose modesty was such that in his own eyes he was a little child." The Rev. Courtenay Weeks, on behalf of the National Temperance League, expressed its feelings of loss, and Principal Selbie closed the meeting after reciting a few instances of the late professor's love for his fellow man, and in particular his interest in lonely undergraduates at Cambridge.

DR. JOHN SIMPSON died at his residence in Belfast on January 11th. He was educated at Queen's College, Belfast, and, after a brilliant career as a student, graduated M.D.Q.U.I. in 1879. He showed special interest in the treatment of diseases of the chest, and as early as 1880, with the assistance of Dr. H. S. Purdon, he opened the Belfast Provident Institution for Chest Diseases, which was the forerunner of the Forster Green Hospital at Fortbreda Park. He built up a large general practice, and was widely respected alike for his personal character as for his qualities as a physician. His only son was junior surgeon in the ill-fated *Titanic*, which was lost on her maiden voyage across the Atlantic. Dr. Simpson was a former chairman of the Belfast Division of the British Medical Association, and took great interest in its work. He was a devoted Presbyterian, an elder of the church, and a convinced but moderate Unionist. He is survived by his widow and three daughters.

DR. WILLIAM GIBSON, of Campbelltown, Argyllshire, died on January 13th at the great age of 98. He graduated M.D.Edin. in 1854, and in the same year took the diploma of L.R.C.S. Edin. Only fourteen months ago he retired from public appointments which he had held for sixty-five years. Dr. Gibson was elected a member of the British Medical Association as long ago as 1870: he resigned in 1920 owing to ill health; he had thus been a member of the Association for exactly half a century. He is survived by a married daughter.

DR. PATRICK JOBSON HENDERSON, who died recently at Jansenville, South Africa, was educated at Aberdeen University, and graduated M.B., C.M. in 1896. After practising in Cumberland he went out to South Africa during the Boer war, serving as a captain in the Cape Medical Staff Corps; after the war he remained and went into practice.

WE regret to record the death of Dr. JOHN GALLOWAY, which took place at Port Elizabeth on November 22nd. He graduated M.B., Ch.B. at Glasgow in 1890, and took the D.P.H. in the same year. He went to South Africa in 1898, and had practised at Port Elizabeth ever since. He was for some years medical officer of health for the town.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

SIR ARTHUR SHIPLEY is announced to give a course of lectures and classes on the history of the biological sciences in the Arts School on Tuesdays and Thursdays at noon during the Lent and Easter terms.

Diploma in Tropical Medicine and Hygiene. — The following candidates, having satisfied the examiners, are entitled to the diploma: J. D. Gazder, P. M. Nanavate, W. W. Pratt, J. P. Rosha, J. Singh.

UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examination indicated:

D.P.H.—Mary A. S. Deacon, G. I. Griffiths, Mary E. Illingworth, Phoebe A. Ince, J. B. Murphy, A. E. Richmond, W. Williams.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY council was held on January 12th, when Sir Anthony Bowlby, President, was in the chair.

Issue of Diplomas.—Diplomas in Public Health were granted, jointly with the Royal College of Physicians, to 17 candidates; diplomas in Tropical Medicine and Hygiene to 17 candidates; and diplomas in Psychological Medicine to 15 candidates.

The War Office Collection.—The Council decided upon the architectural details needed for the proper display of this large collection, which is now entrusted to the care of the College.

Hunterian Oration.—The oration for 1923 will be delivered by Sir John Bland-Sutton.

The Services.

COLONEL ARTHUR M. CONNELL, late Officer in Command, 3rd Northern General Hospital, was presented by the Belgian Consul at Sheffield, on January 12th, with the insignia of the Order of St. Leopold, awarded to him by the King of the Belgians.

DEATHS IN THE SERVICES.

Major-General Sir Walter George Augustus Bedford, K.C.M.G., C.B., Army Medical Service (retired), died at Eynsham, Oxon., on January 8th, aged 63. He was the son of the late Vice-Admiral G. A. Bedford, R.N., and was born at Rathmullen, co. Donegal, on October 24th, 1858. He was educated at St. Bartholomew's and at Durham University, where he graduated M.B. in 1880; he took the M.R.C.S. in the same year. He entered the army as surgeon on February 5th, 1881, he attained the rank of colonel on September 19th, 1908, was placed on half-pay on completion of four years' term of service in that rank; he was restored to full pay on promotion to surgeon-general on January 1st, 1914; this title was changed to major-general in 1918. He retired on October 29th, 1918. After filling the post of adjutant of the R.A.M.C. dépôt at Aldershot, he was appointed deputy assistant director-general at army headquarters on January 11th, 1899, but before the end of the year was sent to South Africa as staff officer to the principal medical officer in the South African war. There he took part in operations in the Transvaal, Orange River Colony, and Cape Colony, was mentioned in dispatches in the *London Gazette* of April 16th, 1901, and received the Queen's medal with three clasps, and the C.M.G. He afterwards served as P.M.O. in South China, 1908-11, as D.D.M.S., London district, in 1912-13, D.D.M.S., South Africa, in 1914; then as D.D.M.S., Southern Command, in 1914-15, and as director of medical services in the Mediterranean and Egyptian Expeditionary Force in 1915-16, when he was mentioned in dispatches in the *London Gazette* of July 13th, 1916, receiving the C.B. on June 3rd, 1916, and the K.C.M.G. on June 3rd, 1918. From 1916 till his retirement he was D.D.M.S. of the Northern Command. Durham University conferred on him the D.C.L. in 1920. In 1880 he married the daughter of the Rev. D. J. Drakeford, by whom he had one daughter.

Lieut.-Colonel Kanta Prasad, Bengal Medical Service (retired), died of heart failure at Benares on December 16th, 1921, aged 61. He was a Punjabi, born at Meerut on May 17th, 1860, and was educated at Edinburgh, where, after taking the Scottish triple qualification in 1886, he graduated M.B. and C.M. in 1887, and M.D. in 1913. Entering the I.M.S. as surgeon on March 31st, 1888, he

became lieutenant-colonel on March 31st, 1908, and retired on June 3rd, 1913. He served on the North-East frontier of India in the Manipur campaign of 1891, receiving the frontier medal with a clasp; on the North-West frontier in the Isazai campaign of 1892, and in the Tirah campaign of 1897–98, on the Malakand, and in operations in Bajaur and the Mohmand country, receiving the medal with two clasps. Most of his subsequent service was spent in civil employ in Burma. He rejoined for service in India during the recent war from January 29th, 1915, until September 9th, 1921. He received the Kaisar-i-Hind medal, 1st class, on June 4th, 1917. He was the author of a work on *Health and Mortality among Educated Indians*, 1913.

Medical News.

SIR JOHN ROSE BRADFORD, honorary secretary of the Lord Lister Memorial Fund, has intimated to the Marylebone Borough Council that the committee of the Fund has accepted the council's offer of a site for the memorial to Lord Lister at the north end of Portland Place. The work will be carried out by Sir Thomas Brock.

THE *Journal of the American Medical Association* for December 24th, 1921, contains a personal appreciation of Sir William Osler, by Dr. J. M. T. Finney of Baltimore, being a lecture delivered under the auspices of the Osler Memorial Association of Los Angeles.

THE annual dinner of the Hunterian Society will be held on Wednesday, February 8th, at the Trocadero Restaurant, at 7.30 p.m., the President, Mr. Russell Howard, in the chair.

A GENERAL meeting of the Tuberculosis Society will be held at the Margaret Street Hospital, London, W.1, on Monday next, January 23rd, at 7.30 p.m., when the report of a committee on classification will be discussed.

THE fourth annual Overseas Medical Officers' dinner will be held at the Exchange Hotel, Liverpool, on Thursday, February 9th, 1922, at 7.30 p.m. Tickets (price 16s.) may be obtained from the honorary secretary, Dr. G. F. R. Smith, 19, Queen's Drive, Mossley Hill, Liverpool.

THE de Roaldes prize of the American Laryngological Association, a gold medal of the value of 150 dollars offered for the best original thesis upon a subject pertaining to laryngology or rhinology, is now open for competition to non-members of that association. Theses must be in the hands of Dr. D. Bryson Delavan, 40, East 41st Street, New York, U.S.A., Chairman of the Prize Committee, before April 1st, 1922.

A BOY died recently in St. Mark's Hospital, New York, shortly after admission, and on investigation it was found that he had been treated for two days before admission by a "chiropractor." *Post-mortem* examination revealed the fact that death was due to a ruptured appendix, which it was thought might be due to the manipulations the unfortunate boy had undergone. Several "chiropractors" are at present under indictment for murder in the United States on account of other cases of malpraxis.

THE entrance standard for students of the Faculty of Medicine at McGill University, Montreal, is to be raised next session; a preliminary standard of one year in arts, senior matriculation, or its equivalent will thereafter be necessary.

THE third South American Infant Welfare Congress will be held this year in Rio de Janeiro.

FOR the past twenty-five years the official monthly magazine of the Medical Mission Auxiliary of the Church Missionary Society has been known as *Mercy and Truth*, but it has now been decided to change its name to *The Mission Hospital*, as a better description of its contents. The first issue of the magazine, which is to appear monthly, was published on January 1st. It is well illustrated, and contains many articles and notes of interest in regard to mission hospitals abroad, including an article by Dr. D. Duncan Main on the work carried on at Hangchow.

THE United States Public Health Service is arranging to send, through the Naval Radio Station at Anacostia, U.S.A., a wireless telephone message every Tuesday and Friday, at 9 p.m., to advise on how the average man and woman may ensure continued good health. It is stated that the messages will be of such a wave length that any radio station, amateur or professional, which possesses a telephonic attachment will be able to hear them, and, according to the *New York Medical Record*, under favourable weather conditions the service expects that its "helpful health hints" will be heard as far as Europe, which we hope will be duly grateful.

TWO representatives of the Medical School of the University of Belgrade, Dr. George Joannovich, professor of pathological anatomy, and Dr. Radenko Stankovich, professor of medicine, paid a short visit to London last month as guests of the Rockefeller Foundation. They had previously visited Canada and the United States. In this country they were received by Sir George Newman, chief medical officer to the Ministry of Health, and under the guidance of Dr. R. J. Reece, senior medical officer to the Ministry, they studied the system of control of infectious disease in this country. They visited the medical departments of University College, the Medical Research Council's laboratories, the Lister Institute, the Cancer Research laboratories, and the Bland-Sutton Institute of Pathology at the Middlesex Hospital. They were shown the working of the V.D. clinic at St. Thomas's Hospital by Colonel Harrison and the North-Western Fever Hospital and Ambulance Station by Dr. Goodall; they also paid visits to the Royal Army Medical College, the Wellcome Bureau of Tropical Diseases, and the Museum of the Royal Sanitary Institute.

AT the criminal court of Hamburg, after a trial lasting fifteen days, a manufacturer and his superintendent were sentenced to three and a half years' imprisonment and to five years' disenfranchizement for adulterating salvarsan. Sixteen defendants were sentenced to two years' imprisonment and sixty-two others who had conducted a flourishing business in adulterating salvarsan were fined 20,000 marks.

THREE Canadian universities—Toronto, Western, and Queens—are co-operating with the Ontario Medical Association in a scheme to keep medical practitioners in out-lying districts in touch with recent developments in medicine by means of extension courses. The province has been divided into ten sections, and at a central point in each it has been arranged to hold various courses and give lectures covering a period of six weeks in each year. The courses have already been begun and have proved very popular, many practitioners travelling hundreds of miles to attend them.

A DINNER was held in New York, on November 22nd, in honour of Dr. Virgil P. Gibney, who has been for fifty years surgeon to the Hospital for Ruptured and Crippled Children, New York.

THE National Medical Association of China has issued a directory of Chinese medical graduates; it contains 1,160 names, and gives the year of graduation, qualifications, appointments held, and present address.

THE distribution in France of ninety prizes to the parents of the largest families, under the terms of the Chauchard trust fund, shows that whereas in 1920 only 24,000 families sought awards, in 1921 more than 42,000 entered the competition; several families of eighteen, sixteen, and fifteen children were reported, chiefly from the departments of the south.

UNDER the will of the late Mr. W. C. Reid of Edinburgh, the Edinburgh Royal Infirmary and the Longmore Hospital for Incurables, Edinburgh, each receive £8,000.

THE Royal Society of Archaeology of Brussels has formed a section of the history of medicine, the first meeting of which was held on December 9th. Dr. Mélis was appointed president, and Dr. Muls, of Brussels, secretary.

THE manufacture, sale, or offering for sale of horsehair shaving brushes has been prohibited in New York owing to the danger of anthrax being contracted through their use.

Up to November 19th, 1921, the total number of cases of plague affecting human beings reported in Queensland was 71; there had been 38 deaths.

MR. W. H. DOLAMORE, M.R.C.S., L.D.S., has been elected to a seat on the Board of the Medical Sickness, Annuity and Life Assurance Society, Limited.

A BANQUET was held recently at Havana to celebrate the twenty-fifth anniversary of the *Revista de Medicina y Cirugia*.

THE third annual dinner of the Incorporated Vermin Repression Society will be held at the Trocadero Restaurant, Shaftesbury Avenue, on Wednesday, January 25th, at 7.45 p.m., with the President, Lord Aberconway, in the chair. The chairman of the society is Dr. Nathan Raw, the honorary director Mr. Alfred E. Moore, the honorary secretary Miss E. D. Knight (Brentmead Place, Golders Green, N.W.11).

THE number of volumes collected for the library of the Jewish University at Jerusalem is 40,000. Separate volumes or collections should be sent to the secretary of the University, Dr. D. B. Stanhill, 75, Great Russell Street, W.C.1.

THE official account has just arrived of a Pan-Russian Congress of Epidemiology and Bacteriology held at Moscow in May, 1921; discussions were held on the diffusion and prophylaxis of plague, cholera, dysentery, malaria, epidemic jaundice, encephalitis lethargica, tuberculosis, syphilis, scurvy, and trachoma, on the provision of Pasteur institutes, and the control of serums, on disinfection, and on the medical press.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

"M. W." asks for statistics with regard to the prevalence of progressive muscular atrophy amongst printers.

"PAROXYSM" asks for information regarding the treatment of bronchial asthma by injections of tuberculin, with special reference to dosage, and any untoward effects which have been observed to attend it.

TRAINING OF AN OPHTHALMIC SURGEON.

IN reply to an inquiry recently received we are advised that a practitioner of sixteen years' standing, with a good knowledge of refraction and a fair knowledge of diseases of the eye, would best obtain the experience necessary for taking up ophthalmic work as his sole practice by attaching himself to an ophthalmic hospital or general hospital where there is a post-graduate college—for example, in London he might join Moorfields, the Central London, Royal Eye, or Westminster Ophthalmic hospitals, the West London Hospital Post-graduate College, or North-East London Post-graduate College (Tottenham). As time is an object and a variety of experience is needed he should arrange to work at one hospital in the mornings and at another in the afternoons. He should aim at joining a hospital where he would be likely to obtain an appointment as clinical assistant at an early date, for he will progress in proportion to the responsibility attached to his work. He should reckon on one year as a minimum time required even in view of his present experience, especially if he desires to obtain some ophthalmic appointment in the region of his future practice; with a shorter period he can scarcely obtain such recommendations from those with whom he has worked as will carry weight with those who have the assignment of ophthalmic posts. He might consider the advisability of working for one of the diplomas in ophthalmology, either that of the University of Oxford or of the Royal College of Surgeons of England.

INCOME TAX.

"HIGHGATE" is a dental surgeon with a medical qualification. He holds an appointment to a home about twelve miles out of London; he is assessed under Schedule E for that remuneration, and the local inspector has refused his claim to an allowance for the expense of travelling to the home in question from his residence.

*** If the emoluments in question must be assessed under Schedule E the expenses cannot be allowed, as it was held in "Cook *v.* Knott" that such expenses are incurred not "in the performance of the duties," but to place the person assessed in a position to commence their performance. But medical practitioners holding appointments are permitted to include fees from such appointments with their general receipts for combined assessment under Schedule D, and in those circumstances the whole of the travelling expenses are deducted. Unfortunately this practice is based on concession rather than on right; and our correspondent's circumstances are not quite *pari passu* with the normal case, as he is not in private practice of a nature to necessitate travelling. We suggest that he ask the inspector to arrange for the combined assessment of both sources, but legally he cannot demand this or require the allowance of the expenses.

LETTERS, NOTES, ETC.

PARATHYROID IN THE TREATMENT OF CHILBLAINS.

"H. E. D." writes that he has obtained the most gratifying result in a very severe case of chilblains of long standing, by the administration of parathyroid gland (Armour), 1/20 grain daily. The patient was a boy, aged 15. As "H. E. D." has no opportunity of testing personally the value of the treatment in a large number of cases, he asks medical officers of public schools and physicians of children's hospitals to give the method a trial. He suggests that, in some cases, lime salts should be combined with the parathyroid, and, in others, that the latter be given separately, in order that a firm decision as to the part played by parathyroid may be reached.

THE NAUSEATING EFFECT OF QUININE.

COLONEL G. F. ROWCROFT, M.R.C.S. (U.P., India) writes: I think the medical and chemical professions have been altogether too complacent and self-satisfied with the final form that quinine has been allowed to remain at as a drug. How many tons of this costly product have been wasted! How often has one seen a dose administered and immediately rejected by the unfortunate patient by vomiting! I have been quite uncontrollably guilty of this waste myself, and I write this while convalescing from a severe attack of malaria, before the recollection of the event becomes dim. If a person be only slightly indisposed, even large doses of quinine can be swallowed without much worry or effort, and the taste wears away after half an hour or so, whilst small doses of a grain or two—for example, in ammoniated quinine—are as nothing. (I have met one or two individuals who, when in health, *said* they liked the taste of quinine.) But, when one feels almost *in extremis*, quinine is a nauseating and disgusting medicine, a dose of 5 or 10 grains or more often provoking the most violent vomiting, adding greatly to the distress and enfeeblement of the patient, and, in any case, leaving a taste which remains in the mouth for the whole of the rest of the day. Nothing seems to dispel it. It seems to instantaneously soak into the mucous membrane of the mouth and pharynx (and even nasopharynx after vomiting, some being frequently forced up there), as if that membrane were blotting-paper, and thence it exudes for hours and hours afterwards, even after nourishment is subsequently taken. There are, of course, various "dodges" for disguising the flavour, but none of them amount to much. Surely in the year of grace 1922 our chemists can produce something a good deal less nauseating and more palatable. Let them try (and not leave it to foreign chemists) and they will earn the gratitude of thousands of sufferers and incidentally save many hundreds of pounds.

P.S.—What about the theory of the value of a purgative before the first dose, the explanation given being that, otherwise, quinine and bile form an inert compound? One often continues taking the drug several times a day for several weeks, but if the above theory is true (though nobody denies the value of the purge), how do the later doses exert any therapeutic effect?

THE MOTHER TONGUE.

DR. W. L. STOREY (Belfast) writes: Allow me to express my appreciation of the first leading article in the BRITISH MEDICAL JOURNAL of January 7th. It is good reading and very provocative of thought. "The mother tongue" has unfortunately some descendants which are nothing but bastard English. Our profession is in constant need of the warning, *Cave canem*, the animal to be avoided being not only dog Latin but canine English. What would Addison or Macaulay think of the present-day spelling and colloquial speech, and the style of composition favoured by the newspapers? But, then, would either of those great writers now make his fortune as a leader writer?

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 32, and 33 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

THE following vacant appointments of certifying factory surgeons are announced: Allendale (Northumberland), Ampthill (Bedford), Deal (Kent), Polesworth (Warwick), Ramsbottom (Lancs), and Yaxley (Huntingdon). The appointment at Kingsbridge (Devon) will be vacant in March.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
Half single column	3 15 0
Half page	10 0 0
Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.